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THE COUNTRY-SIDE

*A Journal of the Country, Garden,
Nature, and Wild Life*

EDITED BY

E. KAY ROBINSON

Author of "My Nature Note Book"

"The Country Day by Day"

"The Religion of Nature"

Etc.

Volume IV

NOVEMBER 17, 1906, to MAY 11, 1907.

LONDON

THE COUNTRY-SIDE LIMITED

2 & 4 Tudor Street London E C

1907

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Illustrations are indicated in each case by an asterisk.

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The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

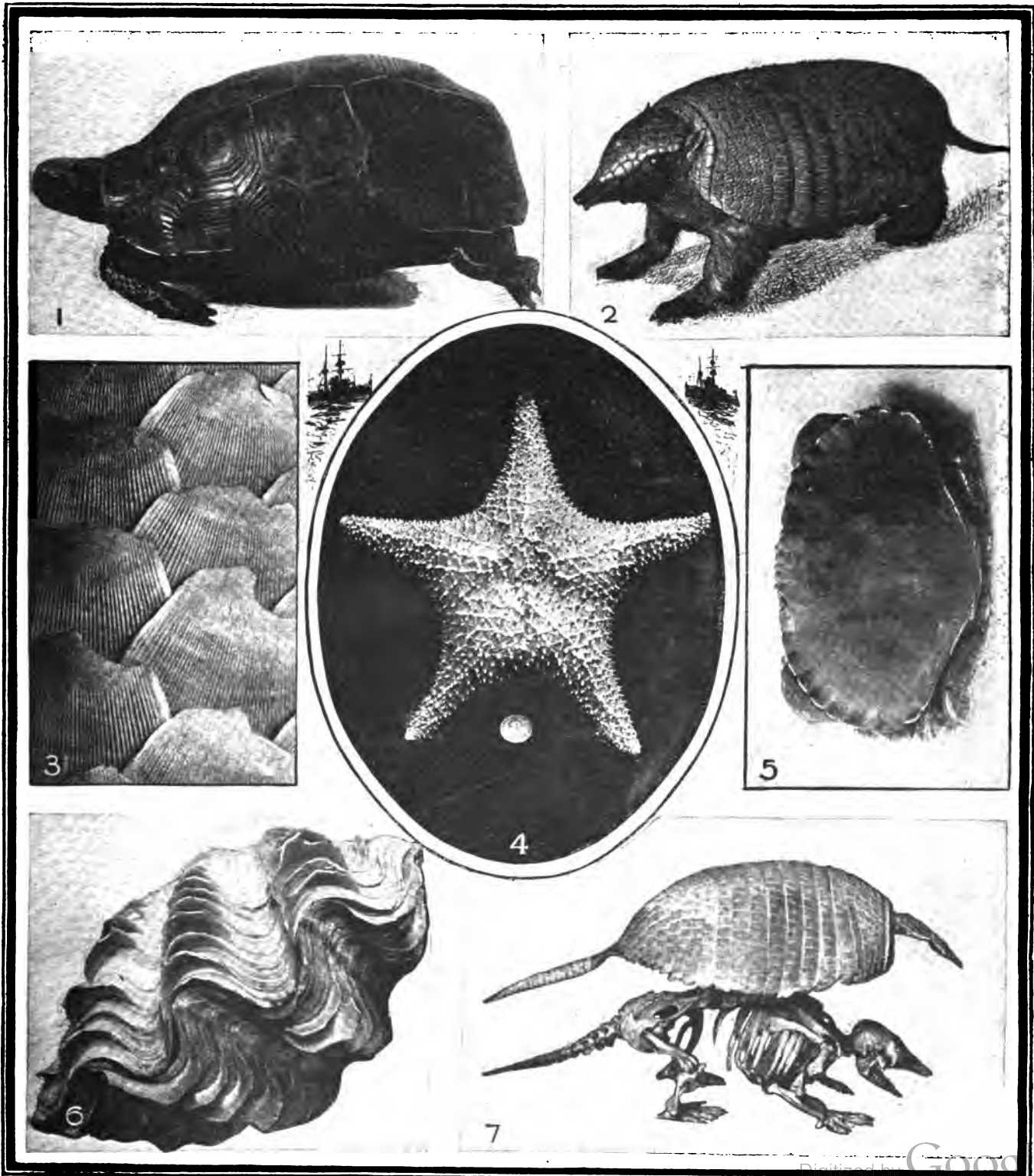
No. 79. Vol. 4

NOVEMBER 17, 1906.

PRICE 3d.

Nature's Ironclads.

(See page 6.)



(Photos. by Percy Collins.)

1. Common Tortoise. 2. The Pichi of South America. 3. The Armour Scales of the Pangolin. 4. Great West Indian Star Fish showing Studded Armour. The Coin is a Half-crown. 5. Common Crab. 6. Ridged Clam Shell. 7. Skeleton of Pichi.

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The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, NOVEMBER 17, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager,

THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

A Swallow Idyll.

By Lt.-Colonel G. COUSSMAKER.

WESTWOOD HOUSE is an old country mansion with many gables and chimneys, an ideal place for swallows. The master, mistress, and their niece are much attached to the feathered tribes, and to swallows in particular, so the behaviour of three of these, Jacob, Rachel, and Leah, was watched with much interest. Leah soon disappeared from their view, and it was only towards the end of this history, that conjectures were started about her. Was she an extra wife of Jacob? Was she his widowed sister? Was she the widow of his friend, or of another cock swallow whom he had slain, and was she therefore dependent on him? The one thing was certain, that he had at the last to look after her and her family.

In the middle of June there was warm and wet weather, and the swallows began to build. Jacob and Rachel had just finished a beautiful orthodox nest with many inches of wall, and lined with hay and feathers, when the weather changed again, and cold northerly winds set in once more. What were they to do? The nest was in a very nice place, it is true, against the topmost pane of a window in the drawing-room, so that their friends might, by standing on chairs, look into it and see the contents; but they felt sure that it would be very cold, so Jacob judiciously determined to consult the Master on the matter.

Now the Master likes plenty of fresh air in his bedroom, and his room had a large bow-window, the upper halves of all the three windows in which were lowered so that the birds could fly through if they liked, and they did like, keeping the gnats and flies away from the Master, and his faithful attendant "Muska," a docile Yorkshire terrier. At 3.30 a.m. on the 23rd of June Jacob perched himself on the top of the lowered window and poured forth all his troubles, to which the Master sleepily replied, "All right, my boy, come here, I will take care of you."

So Jacob went and summoned Rachel, and the two explored the room, and eventually settled on the lintel or head of the south window frame, where, screened by the curtain pole, they might build their nest; and forthwith they began to collect pellets of mud, hay, and feathers, and set to work. For a few days they worked on undisturbed, but then the vigilant niece noticed them going in and out of the window, and became suspicious; the Master had carefully picked up every scrap of nesting material and put it up on the lintel, but it was stated that there would be a mess, that it would give trouble to the domestics, and so the shutters of that particular window were closed during the daytime; but they were always opened at night, and for a long time in the morning; and the other windows were kept open; so Jacob and Rachel, backed up by

the Master, persevered, and eventually it was decreed that they should be left alone.

The Master began to wonder much about Jacob; he evidently did more singing than working; he invited guests in, one of whom must have been Leah, for Rachel used to pounce down at these and hustle them out of the room, while Jacob for the most part sang away. Sometimes he did join the fighting wife, but in a very half-hearted way; then, while she worked away at the nest, he built another alongside of it, and strutting about on the curtain pole he put a bit of grass, or a feather, first into one nest, and then into the other. It was evident that although she was much in earnest, he was more at play.

These nests were not so elaborate as their first one; they had less than one inch of wall; in fact, only just sufficient to keep the lining from falling out. On the 2nd of July Rachel chose which nest she would take to, and laid her first egg, and daily added another, till she began to sit on the 7th. Jacob did not interfere in these proceedings; now and then he stopped his singing and went up on to the pole, strutting about and looking down proudly on his devoted wife, but his songs were directed as much to his outside friends as to her, and, shameful to relate, while she was out of sight overhead, Leah or some other friend was sitting on the window listening to his song. The Leah theory not having entered the Master's head at that time, he thought that perhaps it was the family doctor or some old crony of Jacob's; still, it was only Jacob who sang, and so it was presumed that, contrary to the custom of human beings, only the host among birds opens his mouth, not the guests.

Well, Rachel went on sitting very steadily, and on the 21st, after a fortnight's perseverance, the little ones came out, and the old birds—for it was supposed that Jacob did do some work—cleared off all the egg shells, and no extra work fell upon the domestics. Feeding went on steadily, but still the Master doubted whether Jacob did his full share. It was very doubtful whether he ever brought in more than one insect at a time. Certainly after the exertion of feeding one or two, he strutted about on the pole and sang a little; perhaps it was only to clear his throat. Rachel used to come back with many morsels. However, they got on very well, and in a short time Rachel took to sleeping out of doors, or rather out of window, and the Master supposed that Jacob had introduced her to his friends, as she became less spiteful to them when they came indoors.

On the 6th of August, when the vigilant niece was sitting in the room below, she saw a young bird come down on to an aloe on the grass plot; it seemed somewhat dazed, not to say stunned, so she picked it up, and bringing it upstairs put it with Rachel's other children, as she could see five other heads. This one scrambled along to them, and it was thought that Rachel had six. On the 8th of August the young birds became very restless, walking about the lintel, stretching their wings, and very early on the 9th the Master was awakened by a considerable commotion.

Opening his eyes, he saw on the top line on the lintel Rachel with five children; on the top of the window Jacob with four young birds, and a very subdued looking old bird in the far corner. Jacob was singing merrily, the four young ones kept moving about, and presently they all began flying about the room, Jacob, the four, Rachel, and the subdued one, who was at once called Leah; and then the whole story became apparent to the Master. Leah early in the season had been put down the chimney, where she had built her nest, reared her young, and now, joining Jacob, insisted on her rights. Rachel having her own five was content, forgave him for what had taken place, and they flew a dance of reconciliation. Rachel's family looked on, but could not muster courage enough to fly that day. The next morning, however, the two camps amalgamated, and the united twelve with a song of triumph dashed out of the open window, and after two or three rounds of delight flew on to the top of the parapet. The room was cleaned up, the domestics removed every vestige of nest, and the dead body of the poor little bird who fell upon the aloe was found; this must have been Leah's fifth child. They had gone—the gnats would come—Master was disconsolate; his only hope was that some of them might return the next year, and that he might be alive to welcome them.

Jacob returned on 29th April this year, and Rachel on 3rd May. Their adventures may form the subject of another chapter.

Country-Side Notes.

Warham, Norfolk.

Nature and truth are one, and immutable and inseparable as beauty and love.

MRS. JAMIESON.

* * *

FROM the "Records of the Week" in our last week's issue I held back the reports received of the reappearance of swallows and house martins, after they seemed to have departed, in order that, by putting the records of two weeks together, we should get a better idea of the way in which the movements of these migrants are guided by wind and weather and not by any instinct beyond the inherited tendency to travel in autumn when chill winds blow from north and east.

* * *

During the first third of October the ordinary departure of swallows and house martins was being concluded; and the birds were reported as last seen between October 5th and 11th in the counties of Leics., Berks, Lancs., Norfolk, Chesh., Glos., Hants, London, and Surrey. With uncertain weather the birds were on the whole drifting south, and after October 11th until October 16th they seem to have disappeared altogether, so far as our records go. During the intervening four days not a swallow or house-martin was to be seen apparently in Britain.

* * *

But during the ten days from October 16th to 25th they reappear again, and are reported from a number of places in no fewer than thirteen different counties, nearly all of which are maritime. It is not possible to avoid seeing in this the effect of changed winds carrying the travellers back to Britain; the more especially as during the same period humming-bird hawk-moths, which were undoubtedly, I think, blown over from the Continent, became very common in many parts of England. During the last week of October and the first of November there was no return of continuous summery weather such as results from prolonged southerly winds in autumn. Instead there were marked and sudden fluctuations, with the result that swallows and house-martins were carried singly or in twos and threes to unexpected places.

* * *

So late as November 6th I myself saw a solitary house-martin flying very wearily, as it seemed, over a pond near my house, where no swallow bird had been seen for a full month. But the sun is shining, and the air is full of insects; and, maybe, the next north wind will take the little traveller safely to the south. Nevertheless, these stragglers, which are carried by some unkind eddy of the wind away from the main current of migration and stranded for a while, as it were, in some backwater, must run large risks. Those, for instance, which were miscarried to Masham, in Yorkshire, on October 28th, were observed to be so weak that on alighting the wind caught one bird and rolled it over down the roof.

* * *

In our B.E.N.A. column to-day I am glad to publish an offer from a member at Lewes who is willing to deliver

COUNTRY-SIDE Lectures within an easy radius of Lewes, without asking for any fee, except, of course, out-of-pocket expenses. In addition, there would only be the very small charge for hire of THE COUNTRY-SIDE lantern slides. What we would like to see is an army of willing helpers at work in all the districts of England; because there are everywhere naturalist societies, schools, reading clubs, etc., etc., who would greatly appreciate these lectures, but could not afford to pay the fee and expenses of a lecturer coming all the way from London for the purpose. I hope that many names will be sent in as voluntary lecturers in different parts of the country.

* * *

It is really amazing how inobservant the most observant people may be of facts which lie a little outside of their grooves of thought. The *Daily Telegraph* periodically publishes "Gardening Notes, by Donald McDonald," and, no doubt, numbers of people have been aided and instructed thereby. But a reader sends me one cutting containing the following astonishing piece of advice:—"Constant war must be maintained against all butterflies of every hue, if cauliflowers or any kind of greens are to be enjoyed without the accompaniment of caterpillar sauce." Now, everyone who has had anything to do with a vegetable garden ought to know that there are two white butterflies and one dull grey moth whose caterpillars feed upon cabbages, etc.; but to recommend the wholesale destruction of "butterflies of every hue" in order to protect cauliflowers is as mischievous as ridiculous. Of the four most conspicuously-hued of our common butterflies, three—the peacock, red admiral, and tortoiseshell—feed only on nettles; and the fourth, the brimstone, upon buckthorn.

* * *

With regard to my explanation of the irregular shape of the "merry thoughts" or "wish-bones" (scientifically known as "furcula") of fowls, turkeys, partridges, etc.—namely that the right arm of this important bone is pushed outwards by the distended crop, which these birds carry always on the right side—Mr. J. P. Nunn, of Royston, Herts, points out that the irregularity "is found in very young birds, before the weight of the crop could influence the shape of the bone." "I believe it to be," he adds, undoubtedly congenital and in no way an accidental deformity." Very possibly he is right; but that would not affect the validity of the explanation. Almost all peculiarities of creatures as we see them to-day are the inherited results of circumstances which influenced the development of their ancestors.

* * *

On the other hand I should doubt the possibility of a living bird at any age being too young for its distended crop to influence the shape of its forkbone. In extreme youth, the bones are very soft and pliable, and we know what extraordinary shapes the breastbones of chickens will assume if they are allowed to perch for

the night at too early an age. Therefore, it seems reasonable to assume that the irregularity of the forkbone may be established by the pressure of the crop at a very early age, and that when these birds begin to use their wings they have to put up with the slight inequality of support on the two sides of the body.

* * *

Of the curious specimens which have been sent to me this autumn quite an extraordinary proportion have been multiple flowerheads of the large white Aster or Michaelmas daisy, known as Lady Trevelyan. During the time that this plant was in full bloom, such blossoms constituted 80 per cent. of the specimens received. It seems obvious, therefore, that this particular Michaelmas Daisy has a marked tendency to produce freaks of this kind after such a summer as we have had this year. But a tendency to produce freaks of any particular kind under special conditions can only be the exaggeration of some habit useful to the species in normal circumstances; and one would like to know what advantage the wild stock of this particular Aster gained by its ability and readiness to produce abnormal flowerheads. Without some advantage the tendency—corresponding to the instinct of animals—would not have been acquired.

* * *

In endeavouring to explain that form of bird-migration which takes place between east and west, instead of north and south, in my notes of October 27th, I made an unfortunate reference to the rose-coloured pastor as an instance, because I happened to have a letter before me in which the east-to-west migration of that bird was mentioned. But the migrants which I was considering were those which come as winter visitors to the West of Europe from the east before the advancing cold from Siberia; whereas the rose-coloured pastor comes as a summer visitor to South-Eastern Europe and Asia Minor, fleeing before the hot winds of India. Perhaps I shall most easily make the whole thing clear by taking one typical bird of each class of migrants and showing how and why it migrates.

* * *

The swallow will serve as the type of migrant which travels north and south between Europe and Africa. Almost all such migrants are insect-eating birds, and they have inherited an instinct to fly southwards whenever in late summer or autumn chilly winds from the north threaten to sweep away all insect food, and to fly northwards again in spring when hot winds from the southern deserts bring the same menace. I do not say that the swallow or any other bird knows why he wants to fly when there is a certain "feel" in the air in late summer or early spring. His ancestors have for countless generations survived by flying then; and instinct bids him do the same. By doing it, he easily reaches Africa in autumn and returns in spring—his journey in returning being helped by memory of landmarks.

* * *

If you will look at a map you cannot help seeing how simple a thing it is for the

tide of birdlife thus to fluctuate between Europe and Africa; and you have only to recall your own feelings in autumn and spring to understand the instinct of migration which dominates birds at those seasons. On a crisp, dry morning in autumn, when the wind is in the north, you feel so energetic that you can hardly take exercise enough; and again in the early year when balmy south winds bring a delicious "spring-like" feeling you can hardly control your desire to rush into the country. It is not accident that opposite winds and contrary changes of temperature should produce the same restlessness in us, according to the season in which they occur. Like the birds, we doubtless inherit an ancestral instinct to migrate when the wind is cold in autumn or warm in spring; and all our centuries of civilisation have not eradicated it.

* * *

To return, however, to the birds: besides this north-and-south movement of the insect-eating summer-birds there is a strong migration from east to west of birds which are not insectivorous. Some are omnivorous, like the starling, and others seed-eaters like the brambling; and the purposes of their migration are served when they fly in autumn with the east wind to lands where the grip of winter is loosened by the soft influence of the Atlantic and Mediterranean seas. So we find Britain overrun in winter with Siberian starlings, while the brambling actually spends its winter with us at a higher latitude than it spends its summer in Siberia. By this I do not mean to say that the bramblings which are common in England now have all come from Siberia. The majority have come, no doubt, from Scandinavia. But it is interesting evidence of the terrors of the east wind in the east that the brambling's winter home in Britain is further north than its summer home in Siberia.

* * *

The migration of the rose-coloured pastor is also from east to west; but it travels in a contrary direction and for opposite reasons from those which actuate its cousin, the Siberian starling. If you look at the map of Asia you will see that it is divided from west to east by a long series of great mountain ranges. To the north lies Siberia, whence a starling travels westwards in autumn, escaping the cold winter; to the south lies India, whence the rose-coloured pastor travels westward in spring, escaping the intolerable heat of summer. It is rather curious that these two related birds should thus travel in opposite directions, sometimes, no doubt, actually passing each other during part of the journey; but, of course, the mountain-range barrier separates them and the climates to the north and south of that barrier differ enormously. In neither case, however, would the birds be able to make their journeys unless the prevalent winds blew in the right direction in their seasons of migration.

* * *

I am grateful to a number of readers, who have taken the trouble to write in support of my view that we shall be doing a good and useful work in trying to beautify the surroundings of our towns by the restoration of the rare or beautiful wild plants, insects, etc., which ought to be found there as being appropriate to the

soil. This will be one of the special functions of the B.E.N.A.; and, as an instance of the ease with which a rare wild plant may be multiplied and disseminated, I would note that the seeds of the milk thistle and white musk mallow offered for distribution, by Miss G. B. Norreys have already been sent into twenty-one different counties. Plenty more of the seeds remain for distribution; and these are all the produce of a few seeds gathered from single wild plants three years ago.

* * *

A reader makes the good suggestion that the form of declaration which the B.E.N.A. will circulate, pledging its signatories not to engage in the extermination of rare British creatures and wild plants, should also include a pledge not to reveal the habitat of rare species to any person who has not signed the declaration. It is from lack of such precaution that the worst mischief often happens; as I know from experience. As a boy, I found a wonderful locality for the large blue butterfly in the Cotswolds. It was a small sheltered space where the rare insects were flying by dozens over the wild thyme. I told others of the place, and in two years the large blues were wiped out. This was thirty years ago, and, curiously enough, they have lately been re-discovered in the same place. Evidently a remnant escaped; but where the place is I am not going to say.

E. Kay Robinson.

The Calling of the West Land.

O! the London day is dreary in the autumn's after-glow!
For the sweet West Land I weary, and my heart it aches to go
Where the golden light is gleaming on the wondrous Western sea,
And the skies of sunset streaming with radiant mystery.
O! the London night is falling, but the peace I long to know
Of the sweet West Land that's calling, where my heart cries out to go;
Silent hills their watches keeping by the quiet Western sea,
O'er the valleys calmly sleeping 'neath the starlit canopy.

MARY M. WILSHERE.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published.

Local Secretary.—Gloucester District: Dr. W. Hodges, 38, Park Road, Gloucester.

Mutual Aid Between Town and Country Schools.—One of the many minor schemes of the B.E.N.A. will, I hope, shortly be put into practice under good auspices; for the Hon.

Cordelia Leigh has agreed to undertake the hon. secretaryship of the scheme of mutual aid between town and country schools. By this scheme it is proposed to link suitable pairs of such schools together; the country school once a week or once a fortnight despatching to the town school a collection of nature objects from the fields, the naming, etc., of which has already been made the subject of a pleasant and useful nature lesson in the country school. In return the town school will send to the country school all the natural history cuttings which the children have been able to get from illustrated and other papers. These would probably be as welcome in the village school as the collected specimens in the town school; and this beginning of mutual aid might be extended in many directions. Details will need to be worked out, and we must endeavour to procure funds to cover the necessary postage; but meanwhile I shall be glad to hear from schools in town or country who would like to participate in the scheme of mutual aid.

Voluntary Lectures.—Miss K. Fowler Tutt, Malling, Lewes, is willing to deliver Country-Side Lectures to any gathering of students or natural history society, not too far from Lewes, asking no fee except out of pocket expenses. "If you think my offer will be of benefit to the B.E.N.A., I shall be delighted to assist in the good work and to interest others in this delightful method of sweetening life." This is the true B.E.N.A. spirit; and I shall be glad to hear from other volunteers in other districts. There would, of course, always be a small fee for the hire of the Country-Side lantern slides.

Multiplying Wild Plants.—Mr. G. Du Heaume, Trevilla, Southampton Street, South Farnborough, Hants, knowing a locality where the buck bean is very plentiful, "will send a root or two to any applicants in the south of England who would like to assist in extending the boundaries of this pretty plant." He would be glad to hear from "any reader similarly situated as regards the grass of Parnassus." [This seems to be a good opportunity for those who know of quiet backwaters near our towns to try to introduce the buck bean, which has been described as the prettiest of British wild flowers.—E. K. R.]

Mr. T. Edward Belcher, 24 Clephane Road, Canonbury, N., will be glad to send seeds of the great mullein, *Verbascum thapsus*, to any member sending a stamped envelope.

Miss G. B. Norreys, Warham, Wells, Norfolk, has still seeds of milk thistle and white musk mallow to distribute in the same way.

B.E.N.A. Badge.—General and hearty approval has been expressed by many members of the design of the badge, published in the issue of November 3rd. Some, however, express a hope that the design will stand out against a background of blue or green enamel. I am therefore obtaining estimates of cost, plain and enamelled.

Identification of Specimens.—Ipswich, Woodbridge and District, Suffolk: Birds, especially shore and sea birds, will be identified by Walter Goodchild, jun., Downham, Norwich Road, Ipswich.

Free Distribution of Specimens.—I am glad to hear that Mr. H. G. Brock, 3, Doncaster Gardens, Harringay, London, N., has received enough specimens of butterflies and moths to be able to commence distributing the same among students in his district. As there will probably be more applicants than can be satisfied will entomologists of north London send to him any duplicates which they do not want. All boxes sent by applicants for specimens should be accompanied by return postage.

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an Association in which no fees are charged for membership. Amount previously acknowledged, £12 8s. 1d. Since received: 5s. Mrs. Denning, Dublin.

Vixen.

The Story of an Unusual Pet.

OF all the creatures which have been the delight of our hearts, Vixen, the fox, has had the pre-eminence in interest and intelligence. Vixen reigned supreme for about two years and a half in her kennel at the bottom of the garden. She was little, if any, larger than the family cat when she was sent from the country

should have attained a "height" that was agreeable to her palate. And if she was too hungry to wait for that process, she always rolled her meat in the dust before eating it.

Her food consisted of bread and milk night and morning, with a mid-day meal of scraps from the dinner table, just such as one would give a dog. Only once when with us did she taste raw meat, and that was in the form of the heads and necks of two fowls. But she was so wild and unmanageable that night when her master went for the romp which he and she always enjoyed before bed time, that he begged that the experiment might never be repeated. She would drink milk or water, and would slap it out of the dish

with her paws for fun in a very amusing manner. Nor did she object to be taken by her four legs, even when full grown, and plunged into a bath occasionally.

Vixen soon got to know her name, either in full or shortened, as it usually was, to "Vick," and would come when called.

she knew well, and her affection for her master was unbounded.

The garden at the bottom of which she lived is separated from that at the front of the house by a close wooden fence nearly 200 feet from her kennel, but as the time drew near for his return in the evening she was on the *qui vive*; with eyes bright and watching and ears intent. She knew his step in the front garden, and would pay no attention to the blandishments of anyone else who might be with her when she heard and saw him coming. Then there was a joyous spring to meet him, and, standing on her hind legs, with her paws (or pads, is it?) on his shoulders, she would lick his face, kiss him when asked, and in another instant snatch the handkerchief from his breast pocket, tossing it in the air, seizing it again with a flourish, and worrying it as a dog would a rat, her master all the time attempting to rescue it without getting it torn.

Sometimes he would unfasten her chain, and, holding one end, let her go for a mad race round the garden. Occasionally she would break away and lead him a dance. That also happened—the breaking loose—sometimes when he was from home, causing no little dismay. For neighbours near kept fowls, and if Vixen had taken it into her head to scale the garden wall, by means of the trees trained against it, the consequences might have been disastrous. Happily, she never did, as, standing on her hind legs to try and see over, and never succeeding, her natural fear of the unknown prevented the experiment.

But we would hear a cry, perhaps from the window of the next house, "The fox is loose!" and then down would go all work, and two of the steadiest members of the family would rush to the garden, walking sedately and apparently unsuspectingly towards the fox. She might be capering about, perhaps, or "lying low," like Brer Rabbit, among the thick stems of the asparagus, her favourite haunt on such occasions. But the moment she saw us stoop to seize the end of her chain (which hampered her, greatly among the bushes, though not in a straight clear course) off she went like a flash.

Then there ensued a wild scamper down the secure space between the wall and the prickly gooseberry bushes, or a race as for life along the open strawberry bed on the opposite side, a twisting and curling of the snake-like chain through the asparagus stalks, a mischievous lying down among them as if exhausted, till a hand all but grasped collar or chain—then a saucy toss and spring, and away again to repeat the game, which Vixen enjoyed as much as did the owners of the laughing



Photo.]

"Vixen."

[Copyright.]

to one of our boys, and as savage as such a small creature could be, snapping and snarling at every one, owing to having been teased while in confinement previously. One hind leg appeared to be dislocated, for she dragged it behind her, so she was carried off to our doctor, followed by an admiring crowd of street boys. However, the doctor could not do anything for the fox, and I sometimes fancy it must have been a feint, for in course of time all trace of anything amiss disappeared.

She was a beautiful little creature, with bright, intelligent eyes, ruddy brown fur (pure white underneath), and bushy "brush," which became so large and handsome that one of her admirers used to threaten to have it amputated for use as a boa. Her master built her a large, two-roomed kennel at the foot of the garden, the inner room with a raised boarded floor for a sleeping apartment, and only some small round holes to admit air.

Here she would retire during the heat of the day, pulling to the door behind her, and it was very difficult to induce her to come out, the end of her sharp nose lifted to the ventilating holes being the only response to vigorous raps on the "wall." We fastened a light leather collar, with a long light chain attached, round her neck, and this was secured inside the kennel, which had an outer door of white netting, shut and locked at night.

When she wished to retire into private life, she always partially closed it herself, just leaving sufficient room to squeeze through; she would stand on her hind legs and push it to with her paws. It was a curious following of instinct, considering that she could both see, and be seen, through the netting, except when in her sleeping room.

The outer floor was cemented (after we found that she had nearly travelled under the side of the kennel one night) but that did not prevent her digging round the sides with her powerful paws and claws, to bury bones and bits of meat until they



Photo.]

Vixen was greatly attached to her human friends.

[Copyright.]

except when taking her afternoon siesta. She also very soon gave up snapping at any member of the family, all of whom

saucy toss and spring, and away again to repeat the game, which Vixen enjoyed as much as did the owners of the laughing

faces watching the fun from overlooking windows.

But alas for the weakness of fox as well as human nature! One day one of her pursuers remembered her love of sweet things, and sent the other hunter to the house for a spoonful of Strawberry jam. Cautiously approaching Vick with the spoon held well in advance, we waited for her to see what was being offered, and in one moment she came quietly up and began licking the dainty off with great satisfaction, entirely unheeding the hand that had closed upon her chain.

Her frolic ended, one of her friends picked her up in arms (a proceeding to which she never objected in the least) and carried her ignominiously "off to her den, oh!" Her favourite amusement during the long summer days, when no one was with her, was to lie apparently sleeping outside her kennel, watching the birds which came down to steal her food. Then she would spring at them. But they were always too quick for her. Not so, however, the poor little mice, whose carcasses we found more than once lying beside her plate.

The family cat had for long before Vick's advent enjoyed a monopoly of the asparagus bed for sparrow-hunting purposes. She never seemed to have any fear of the fox, but would not respond to Vick's overtures for a game of play. However, on one occasion her too great confidence nearly cost the life of her best-beloved kitten. It ventured just within Vixen's reach; there was a dreadful noise and scuffle. No one knew exactly what happened, but we saw Vixen swung by her chain high in the air just as her fearfully armed jaws had opened upon the soft, defenceless thing, and as her master, who had sprung to the rescue, allowed the fox to regain her feet, off walked Dot, swearing and spitting and twice her usual size, accompanied by her family in like condition.

As before stated, Vixen soon knew every member of the family, and would allow herself to be petted and stroked, walking round on her hind legs, with her paws in her friend's hands. She liked to be combed all over, particularly her splendid brush. Strangers she eyed suspiciously, especially men, and would not allow them to touch her; nevertheless, she once spent three days as a penny side show at a sale of work, thereby earning quite a nice little sum towards its object. She behaved beautifully, eating chocolate drops "as to the manner born" until the third day, when she grew tired of admiration and confinement, began to sulk and be cross, so was taken home to her own quarters and friends.

She had only one enemy—the man who attended to the garden; he feared and disliked her, and hurt her once or twice, which she never forgot. She did not, however, show the slightest fear of him, but would come out of her den and stand outside barking, whenever he was in the neighbourhood of her kennel. She had a short, hoarse bark, but was never heard to use her voice except when he was by.

It was a wonderful thing to see a creature whose ancestors had probably been wild since creation so tame and intelligent as Vixen became under kindly influences. And we had no reason to think she was otherwise than happy; she was certainly

attached to her human friends and pleased in their company. Still, one could not help fancying how those strong little limbs, and that graceful, sinewy body would have revelled in perfect freedom. But we had to part with her, as her owner was leaving home for some years, and there was no one who cared to take charge of her kennel, though we did not object to looking after the fox herself. So she was sent to one of the zoological gardens, where her size and beauty won praise from the manager; and we saw her no more. The accompanying photographs give an idea of her appearance, but she was so frightened at the mysterious-looking camera that her usual expression is wanting.

Nature's Ironclads.

By Percy Collins.

(See page 1.)

ARMOUR plate, in one form or another, was undoubtedly one of the earliest protective devices in nature. We have no modern armour-plated beasts which can compare with the giants to the existence of which abundant remains in the rocks of the South American continent bear witness.

The Glyptodon, for example, is known to have been not less than 11 feet in length; while the closely-related Chlamydothere was even larger, and would have rivalled in bulk the rhinoceros of our own time. These gigantic beasts moved under huge armoured domes of bony plates. Examining their remains, and the restored skeletons, in the Natural History Museum, one is surprised that any causes sufficiently potent should have been found to work the extinction of these creatures.

But although the employment of armour as a protective device in nature is undoubtedly on the wane, especially among the higher forms of animal life, countless examples of armour-plated animals still exist.

In South America we have the armadillos, perhaps descendants of the extinct beasts mentioned above. In armadillos, the protective covering is composed of bone material, deposited in the true skin in the shape of little shields, each shield being covered with a horny plate developed in the outer skin, or epidermis. The arrangement of these horny plates varies very much in different species.

In the "three-banded" armadillo, for example, we find solid cuirasses above the shoulders and the loins, united by three jointed bands, from which the animal takes its name. The "pichi" and the "tatouay," on the other hand, have much more numerous bands, while the cuirasses are reduced in size.

In every case, however, the banded arrangement exists, and enables the animal, by a muscular contraction, to tuck in its head and limbs, and bring the edges of its protecting cuirasses almost together. Were it not for this hedgehog-like characteristic, the armadillo's protection would prove inadequate when a strong enemy attacked it.

In the case of those extraordinary mammals, the pangolins, of Southern Asia and Africa, we see armour of a quite different type. It takes the form of overlapping, horny plates—like so many great fingernails—which originate entirely in the

epidermis, and have no bony foundation. These plates, in fact, are closely related to hair, just as are the spines of the porcupine and hedgehog.

The photograph on page 1 gives a good idea of a portion of a skin of one of the strange creatures; but in the Mammalian Gallery of the British Museum (Natural History) will be found a case of fine stuffed specimens, in characteristic poses, together with excellent descriptive labels.

With tortoises and their kindred, we come upon an armour which, in its "make up," reminds us not a little of the armadillos. For the shell, or carapace, is formed mainly of bony plates, some of which are an outgrowth from, and are actually welded to, the backbone and ribs, while others originate in the true skin, as we saw to be the case with the armadillos. The exterior of the carapace is covered with plates of horny material—the "tortoiseshell"—and these are not, as a rule, welded together.

That the lines formed by the apposition of their edges do not correspond with those which indicate the junctures of the bone foundation plates is noteworthy, for this fact not only reveals the true origin of the tortoise's complex armour, but lends support to the idea that these reptiles trace their origin to the same ancient stock as crocodiles and alligators. In the case of these latter beasts, we find, above the more vulnerable parts of the body, great horny shields in the skin, and beneath them well-developed plates of bone.

To discuss in detail the various forms of armour plate existing among the lower animals would demand more space than we can devote to the subject. Every reader, however, will be able to summon instances innumerable to his mind. A common edible crab squatting among the pebbles in a rock pool, with its legs tucked beneath it out of harm's way, presents a surface of impenetrable armour to the world. Starfishes, especially the giants of tropical seas, show us a type of armour not unlike the tough, embossed shields characteristic of early warfare. Their integument is hardened by the presence of much calcareous matter, and studded with nipples of the same hard material. The Mollusca—the "shell-fishes"—are with very few exceptions armour-bearing animals. The rigid strength of such shells of those of the giant clam speaks for itself.

The Bahalia.—The Indian bird-catcher or Bahalia, concerning whom we lately published an interesting article by Mr. E. Cockburn Reynolds, supplies the bird-fanciers of the bazaars with rare birds, mynas, parrots, and hawks. He is not expert alone with his lassard, but can net a field of quail very effectively, or float among the wild duck in the twilight of the morning with his body under water and his head hidden in a "chattie" (an earthenware pot) which appears to be idly floating, and noose the entire flock by the leg before they discover his presence. You may see him going round with two huge cages depending from a bamboo across his shoulder, crammed with young parrots, veritable hedgehogs, whose blue quills are just beginning to get tipped with green tassels, and whose heads bob up and down idiotically to an accompaniment of plaintive "caw-caw-caws."

The Woad Harvest.

An Interesting Account of a Little-known Industry.

By TOYE VISE.

WOAD is a word that strikes unfamiliarly upon the ear of the present day Britons; and to the majority of folk its existence is a thing of the very remote past, conjuring up hazy

flourishing industry, scattered throughout the country, and chiefly where the land was particularly good. Its cultivation was mainly carried on by a nomadic class of farmers, who rented suitable land on short tenancies, as the crop being a particularly "strong" one, the soil soon



Woad Cropping.

The plant is plucked by men and women who crawl across the fields on hands and knees.

memories of our painted forefathers, but having no living connection with the Britain of to-day. Yet now is the harvest-time of the woad; and, quaintly enough, among others who will benefit therefrom is the London policeman, and thus is bridged the yawning chasm of two thousand years of the changing costume. On one precipice stands the ancient British brave, radiantly happy in "quite the latest thing" in woad stripes; and on the other is poised the dignified figure of the law, with hand upraised, clad in his suit of woaded cloth!

In South Lincolnshire, in several villages grouped around the old seaport town of Boston, and all within sight of its magnificent church tower, known as "The Stump," woad-growing is a recognised industry. And in the Cambridgeshire fens, just over the Lincolnshire border, some seven miles from Wisbech, at Parson Drove, the oldest woad factory in England still flourishes. As far as I am aware, woad-growing for commercial purposes is confined to these two counties; but the plant may be found growing wild in the chalk pits at Guildford.

Among the peasants of the fen country the plant is always spoken of as "wad," following the Saxon derivation, but "wode" is the generally accepted form with folk of a higher degree. Botanists know woad as *Isatis tinctoria*; while the men who traffic in the commodity have dubbed it "dyer's weed." Old Sowerby, in his book of plants, tells us it was usual for women to make complexion plasters from crushed woad leaves. As to this, I have lived the greater part of my life within a few short miles of the factories, and have mixed with the workers, but have never heard of the practice, and therefore cannot recommend it to the ladies with any degree of certainty.

At one time woad growing was a most

exhaustive character of the crop is indicated in many an old land lease, wherein "the lessee hereby covenants with the lessor that he the lessee will (*inter alia*) not sow any woad, nor permit any cole, rape, turnip, or mustard to stand for a crop of seed."

There is now but little need for such a clause, as the

mother of all Parliaments. In Government cloth contracts there is inserted a clause that all material shall be well woaded.

In the cultivation of the woad there is much labour, and probably no other crop requires such constant attention from the time of seed in April to the final harvest in November. And the cultivation is primitive throughout—it is hand-husbandry. The narrow, half-inch purplish brown seed-pods are threshed with thong-jointed flails, the seeds being yellow in colour and three times as long as they are broad. The seed is jealously guarded, as the industry has become the monopoly of a few growers. The fields are sown in sections at different dates, so that the factory may have just enough stuff to keep it going. As the seed is sown, the soil is carefully hand-raked, all the larger clods being drawn to the sides of each bed, which is some twelve feet wide. As soon as the little plants push their way through the brown soil, the struggle begins to keep down the weeds, as the woad seedling is very delicate. In this work men and women have to humble themselves by crawling along each bed, as day after day, week after week, the weeding goes on. As the weeds get bigger, the workers use a "woadspud," which is a dwarf-handled tool with an inverted hoe head.

In August the first harvest is gathered by hand. Later harvestings are cut with the woad-spud.



Drying Ranges.

On these shelves the woad balls remain for several weeks until quite dry, when they look like the top of a cottage loaf of black bread.

introduction of indigo practically killed the industry. But there is comfort in the thought that indigo has been ousted in its turn from commercial high places by the discovery of the coal tar dyes, the Jubilee of which latter has but recently been celebrated. Woad is now, to all intents and purposes, the founding child of the British Government, drawing, as it does, its nourishment from the

Once in the factory, the woad undergoes a variety of operations. It is crushed under the mill; fermented in troughs; balled; laid on racks, exposed to the winds of Heaven; broken in the "breaking-shed"; and casked. The most distinctive thing about the factory is the crushing-mill. At Parson Drove the mill is very ancient, and is housed in a tumble-down thatched-roof shed. It is set in a small circular pit some two feet deep. From a central shaft radiate three large poles with a big wooden drum ribbed with iron attached to each end. From a merry-go-round structure there drop hanging shafts—one set to each drum-wheel—and a horse being harnessed to these, the motive power is thus supplied. As the wheels revolve, the woad is thrown underneath and remains until reduced to pulp. During fermentation all the blue dye is drained off, as of no value, for woad is used only to produce a brilliant "finish" in the cloth.



Woad Mill.

The huge ribbed wheels crush the leaves to a pulp; and this pulp is used in dyeing operations of government cloth.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Horses and Bad Weather.—Sir,—The reason why horses turn their hind quarters to the storm is that under the skin on those parts there is a hard horny substance or nature's second protection. The leather currier shaves this away and the outer part is used for boot uppers on account of its close fine grain and the beautiful polish it takes. The great drawback is its tendency to crack. This part of the skin on being curried is called "crup."—Yours, etc., M. H. CHARLESWORTH, Horbury, near Wakefield.

Sparrow-Hawk in a City.—Sir,—A sparrow-hawk recently chased a pigeon into the heart of this city. The pigeon got home all right, but the hawk struck a telegraph wire and, although apparently dazed, rose and flew away countrywards. I may mention that the pigeon was returning from a fairly long fly. Now, is it a usual occurrence that sparrow-hawks chase domesticated pigeons so zealously and so near a large town?—Yours, etc., J. CRAWFORD, Eglinton Street, Glasgow. [At this time of year young sparrow-hawks are wandering and often appear in unexpected places. One has been seen several times in London lately.—Ed.]

Sparrow as Cuckoo.—Sir,—Early in August a pair of house-martins had just completed their nest under the eaves when they were driven away by a pair of house-sparrows. This so vexed me that I shot the cock sparrow. The hen returned to the nest, but finding her mate did not return, she left. After this the martins returned and remained in possession. Later, hearing a chirping coming from the nest, I found on looking into it that it contained three young martins and a young sparrow, all newly hatched, which the old martins fed in turn with their own. When all were able to leave the nest and sit on the roof, the martins refused to feed the sparrow, who, finding himself neglected, returned to the nest. The martins again fed it, and continued doing so until the sparrow was able to take care of itself.—Yours, etc., E. SWAIN, Houghton Hall, King's Lynn.

Swallows Follow the Plough in South Africa.—Sir,—While ploughing I noticed about thirty swallows following the plough and picking out all the grubs and worms that were turned over. Do they do the same in England? I don't remember noticing them there. I look forward to receiving your paper every week with much interest.—Yours, etc., ARTHUR BUTTNER, Swinburne Station, Harrismith, Orange River Colony, South Africa. [Have any readers ever seen swallow birds in England following the plough? Probably they would, as wagtails do, but there is so little ploughing done while they are with us.—Ed.]

Supposed Flower Mimicry.—Sir,—May I make a suggestion re apparent flower mimicry. It is found to take place when plants are close together. The root-hairs of plants exude a fluid which is capable of dissolving various mineral substances, rendering them

absorbable. May not the closely interlaced root-hairs of adjacent plants absorb each the fluid of the other which in their tissues causes a different chemical combination, resulting, in rare instances, in the development of a blossom resembling the neighbouring plant? Perhaps a reader who knows more of this action may comment.—Yours, etc., KATIE FOWLER TUTT, Lewes.

Tortoises and Eggs.—Sir,—Some months ago I purchased at the door of my house two tortoises and turned them out in the garden. They fed at first chiefly on a weed, of which my lawn is rather full, and subsequently discovered the lettuces which they henceforth used as food. One day we noticed that one of the tortoises had been scraping a hole in a flower bed and it was observed that the creature was covering up some eggs. We found two on the surface, but on removing the earth we found two more. The doctor who has been attending here for the last few months as *locum tenens* for my doctor, who is away ill, suggested my having the eggs photographed to send on to you for the use of your paper. I enclose a photo herewith.—Yours, etc., H. J. LANE, Holmwood, Carshalton Road, Sutton. [This reminds me of an amusing experience that happened to the

shot at one which flew about a mile before it dropped. A stranger picked it up and the bird's mate followed him for a considerable distance croaking like a heron. Hearing that the bird was in the hands of the taxidermist, I at once paid him a visit, and sure enough there it was—a magnificent specimen and in beautiful plumage. These are the only cormorants that have come under my observation in this neighbourhood.—Yours, etc., G. FRISBY, Quorn.

Newts in Devon.—Sir,—It is stated in the first volume of the recently-published "Victoria County History of Devon" that the great crested and common newts are rare throughout the county, their place being taken by the palmated newt. At Barnstaple in a quarry pool the common newt can be caught in hundreds as well as the palmated newt, but the great crested is rare. This is the only pond in the district I know of where newts are found. As the natural history dealt with in this "County History" is written by well-known men, the statement is no doubt correct, but it would be interesting to have notes on the distribution of these species from other readers living in Devon and the west of England.—Yours, etc., BRUCE F. CUMMINGS, Barnstaple.

A Flightless Diver.—Sir,—On October 29th I obtained an immature, although full-grown, red throated diver (*Colymbus septentrionalis*) from a shore gunner who killed it near the Britannia Pier. It had not a vestige of red on its throat, nor had it a solitary primary (flight) feather, save the softest blue pulpy stumps just showing, and a white fluffy downy line margined the course of the secondary feathers. Now, Sir, had that bird ever had flight feathers (seeing the down present), or had it moulted them simultaneously? If it did not fly south, it had, indeed, travelled by tide and padding far from its native haunts. If it had just moulted, then it was in a sorry predicament in case of sudden easterly gales, and must soon have perished. The bird was as heavy and fat as a



Photo.]

[G. W. Bradshaw.

Tortoises and Eggs.

These creatures were purchased by a reader from an itinerant vendor and had not been long in the garden before they produced the eggs.

wife of a friend of mine. She kept pigeons and was surprised to find an egg one day on the lawn. Taking it indoors she beat it up in her tea. The next day she found another egg and then discovered that this one and the one she had eaten were not pigeon's eggs at all, but were from a tortoise which she kept. Her feelings at finding she had consumed a tortoise egg can better be imagined than described.—Ed.]

The Cormorant Inland—Shot, of Course.—Sir,—When returning to the village on October 18th I perceived two large black birds, which I at first took for black scoters, having seen a pair previously at the reservoir, gracefully descending in circles to a fishpond near at hand. The size and colour of the birds, together with the outstretched neck and legs, attracted my attention. Two days later I heard that a cormorant had been shot at this very spot. This proved true. A man had observed them sitting upon a beech tree and

Christmas goose, and was endeavouring to snatch sea anglers' baits when killed. As this bears on your recent remarks on ducks moulting, I thought you might like to "dissect" this instance in your "Country-Side Notes."—Yours, etc., ARTHUR H. PATTERSON.

Nesting of Sparrow-hawk.—Sir,—In reply to "Midnithsdale," I may say that nowadays there ought to be very little doubt about this hawk's building arrangements. It always (always is a safe word here) constructs its own nest, and even when another bird's ancient home or a squirrel's drey is used as a foundation, the usual nest is built on top of it. I have examined many dozens of sparrow-hawk's nests and have also watched the bird building in several cases. In conclusion the sparrow-hawk's nest is unmistakable, being built on totally different lines from nests such as those of the crows, rooks, etc.—Yours, etc., JOHN WALPOLE BOND.

A Reformed Dog.—No one would suspect in the sleek, graceful, and intelligent-looking subject of Her Grace's photograph a member of one of those gangs of mangy, cowardly curs which infest Indian bazaars and villages. Yet everyone who has lived in the East knows that if you get a pariah puppy when it is very

raged my better feelings and wronged their confiding mother. Are cases of this kind often met with.—Yours, etc., T. SMITH (Captain), St. Andrew's Road, Enfield.

Cruelty to Hounds.—Sir,—Mr. W. C. H. appears to be a good sportsman and fond of hunting, but until recently he had attended the hunt as the audience attend a play at the theatre. One morning he is treated to a peep behind the scenes—a rehearsal—and he is much shocked at the revelations. I can assure him that there are as much hard work and unpleasant incidents in putting a pack of hounds through their paces as there are in any other occupation. There is always a seamy side to the coat, though the seams are rarely seen. The hound is a very high couraged animal, and when he takes to sheep chasing only drastic measures will suffice to correct this fault, which has such a far reaching effect. The hound, if not sufficiently corrected, will induce, by example, his fellow hounds to become sheep killers—sheep killing being only a little removed from sheep chasing. The hunt will have to pay for all damage done to sheep, and would soon become very un-

attracted by its shrill cries when it was flying with a school of these birds. It, however, if I remember rightly, again became a caged bird the following autumn. A parrot's cage was placed in a pear tree which had been frequently visited by the bird, and this, baited with a few pears, acted as an effective trap for the marauder. The point, however, that I wished especially to refer to was the fact mentioned of the bird being in perfect plumage. This would give an uninitiated person the idea that the plumage of birds in captivity is indifferent. In the hands of bird "spoilers" this may be so, but people who apply themselves to the keeping of birds intelligently, either as aviculturists or exhibitors, can usually manage to keep most of their birds except at moulting time in a condition of plumage seldom excelled by birds in a wild state. I have found that although the plumage of a bird is at its best in a wild state at the commencement of the breeding season, after fighting rivals, dodging enemies, natural and unnatural, and surviving the process of rearing a family of youngsters, a wild bird will not in many cases previous to its moult present itself in anything like the condition of a judiciously cared for aviary or caged specimen. It is by the coarse scuttelation of the tarsi, i.e., the large scales on the legs, that an old cage or aviary bird when caught wild is often betrayed, at the same time it must be borne in mind that this characteristic is in ordinary cases only developed by birds which have reached an age seldom equalled in a wild state. The keeping of foreign birds has now become a common hobby, and considering the enormous numbers imported and the frequent escapes, it is a wonder we do not see more of these wanderers.—Yours, etc., ALLEN SILVER.

The Cowper Window.—Cowper was a friend of all animal life and a lover of nature, and



[Photograph by Her Grace the Duchess of Bedford]

Pariah Dog.

Showing the effect of kind treatment upon one of these half-wild curs of the East.

young and bring it up like an English dog, it will develop almost all the traits of fidelity, courage, cleanliness, etc., which distinguish our best-bred house dogs. Even its voice will change somewhat towards the honest bark of an English dog from the weird half-howl, half-bay which the ordinary pariah utters—as though trying to bark with a hot potato in its mouth. Darkish fawn—as in the picture—and black are the commonest colours of pariah or "pie"—dogs, as they are often called.

Rat's Maternal Instinct.—Sir,—The following pathetic incident connected with a mother rat occurred a few years ago on the late Mr. John Sutton's farm at Marley, Finglesham, in the parish of Northbourne, Kent:—I was at the farm one morning and was informed that a "ratting" was about to begin. On being asked to take part in it, I was requested by those in charge to stand in a bullock-lodge with a stick in my hand to strike and kill if possible any rats which the ferrets and dogs might send my way. Presently a large rat, which proved to be a mother-rat, came to a hole and from it gazed steadfastly at me for quite half a minute and then retired. Very soon she came again with one of her young and slightly haired babes in her mouth. Advancing towards me she laid it down at my feet. She then went down the hole again, but only to return with another which she left in the same way. Going away as before, I quite expected to see her bring a third young one, but she did not appear again, and I had reason to believe that a ferret had killed her. Her gaze at me was so pathetic and pleading that I really had not the heart to kill the two young rats, although I felt it was a duty, owing to my friend, Mr. Sutton, to do so. I hesitated between sympathy for the poor confiding mother and my duty to him. At length I compromised by putting the two unfortunate little creatures under a heap of straw, thinking that if the mother were left alive she would feed them, and if not that they could only die. Presently, however, the ratters and dogs came into the lodge. Singularly one of the dogs went at once to the heap of straw under which the young rats were, found them quickly, and gobbled them up. Thus did their lives end. I was really sorry they did end thus, for it seemed to me as though I had somewhat out-

ed, will induce, by example, his fellow hounds to become sheep killers—sheep killing being only a little removed from sheep chasing. The hunt will have to pay for all damage done to sheep, and would soon become very unpopular with the farmers. If the first offence is not severely dealt with it would soon become a confirmed habit, and it would then be an impossible task to correct it. It may be quite safe to say that the huntsman and the whip, who saw the offence and who knew the temper of their individual hounds, would be the proper persons to judge the amount of chastisement necessary. The butt end of the crop used could not, it seems, have been a very heavy one, or some bones might have been broken, which would have been a result very far removed from the wishes of the chastiser. This treatment would seem unnecessarily severe to a person not well versed in doggy instinct, but let him try his hand at training a pack of hounds to "ware sheep" and he would soon come to the conclusion that the only way was by a very severe flogging when the offence occurred.—Yours, etc., L. THOMAS, Rope Walk, Neath.

Wild Birds and Caged Birds.—Sir,—Referring to your "Nature Records of the Week," issue October 20th, I noticed an account of the occurrence of a rose-ringed parakeet in Essex. On the borders of Suffolk and Essex I recorded in the *Feathered World* some years ago a similar instance. The bird in this case was *Palæornis torquata*, and I had seen it in company with rooks off and on all the winter, several times having been



Photo.]

[J. T. Newman.]

The Cowper Window at Berkhamsted.

The poet's famous tame hares are shown gambolling in front of him.

the centre panel of the memorial window in St. Peter's Church, Berkhamsted, represents him seated with his two famous tame hares gambolling in the foreground. These animals were so tame that they would feed from the poet's hand and follow him about.

The Strangest of Plants.

By S. Leonard Bastin.

(Illustrated from Photographs by the Author.)

It is not every plant that is grown solely for the sake of its flowers. There are hundreds of species which, owing to the insignificance of their blossoms, would scarcely find a place amongst cultivated

One of the most remarkable is *O. formidabilis*, a variety with thorns of immense size, in good specimens sometimes as long as seven or eight inches.

Another great curiosity is *O. papyra-*

chemist's stores. The specimen under consideration is probably unique, it being in the famous Crisp collection.

The genus *Opuntia* is worth growing from the fact that many of the species have handsome flowers, and a great many produce edible fruits, which are in some instances of pleasant flavour.

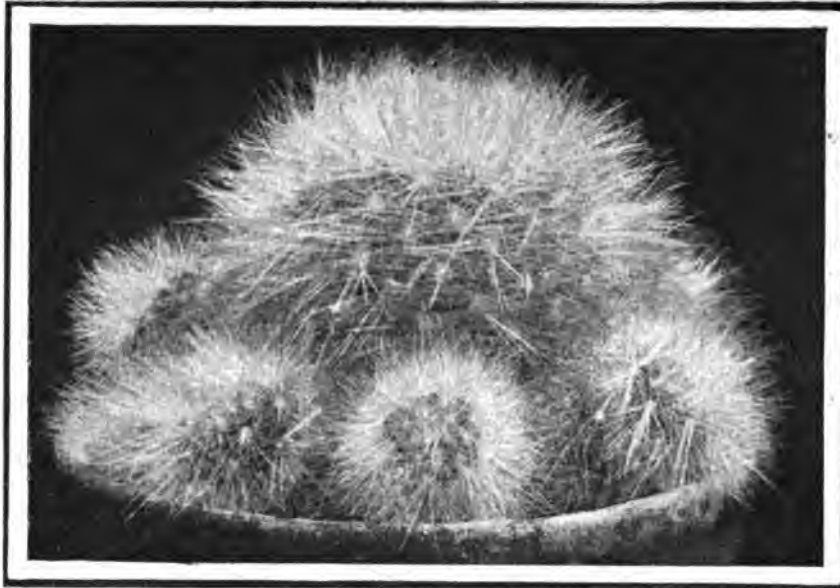
Of course, the so-called prickly pears, commonly grown on the Mediterranean seaboard, are really *Opuntias*; and farther towards the east the species are spoken of as Indian figs.

Some of the varieties of *Opuntia* are really hardy in sheltered localities in England, although they will succeed best if treated as frame subjects. The greater number of them, however, will thrive most healthily in a warm greenhouse, where they may be kept in plenty of light. Practically speaking, the plants should not be allowed any water during the winter.

Whilst upon the subject of growing Cacti for their appearance as plants, rather than for the sake of their flowers, it may be of interest to refer to the charming hobby which has lately been introduced into this country from Germany.

As all gardeners know, almost any portion of the Cactus plant will grow, and this tendency has been turned to account. Very small pieces of certain varieties are rooted and carefully potted into tiny pots, scarcely as big as thimbles, and in this condition a very delightful collection of miniature specimens may be brought together.

If the plants are watered as little as possible they will not increase greatly in size,



Mammillaria senilis.

A lovely species with thin white spines, not to be confounded with *Cereus senilis*, the real "Old Man Cactus."

species were it not for some attractive feature in the form of colour of foliage.

Whilst it cannot be said that the Cacti as a family are at all lacking in beauty florally, yet many of the varieties flower at long or very irregular intervals, and would to most people's thinking be scarcely worth growing for the sake of their blooming properties alone.

It is a fortunate thing for the gardener that many species of Cacti are really very beautiful in form and are quite worth growing on this account if for no other reason.

One of the groups most worthy of attention on this account is *Mammillaria*, a genus which at the present time is coming into a good deal of favour. Generally speaking, the stems are cylindrical, although they are not invariably so.

A very large number of the species, quite apart from their floral attractions, often considerable, are objects of the greatest beauty, owing to the manner in which the protective spines are arranged.

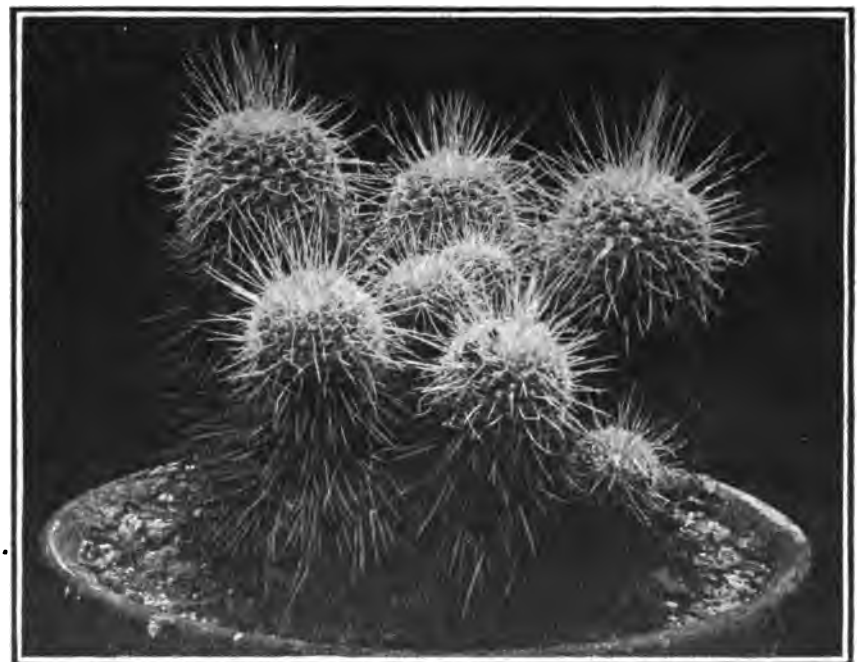
These are sometimes as stout as needles, whilst in other varieties the prickles have been reduced to the fineness of hairs, each one standing out quite stiffly, however, and the whole forming a most complicated pattern.

Mammillarias are amenable to much the same treatment as other Cacti, although extra special care should be taken to guard against over-watering during the winter resting period of the plants. Of course, more liberal supplies of moisture will be appreciated during the summer.

Many of the *Opuntias* are not especially pleasing in their appearance, but a few of the species are worth growing on account of their curious or beautiful form.

cantha, a plant which produces an abundance of broad spines like so many strips of white paper.

A rare and unnamed *Opuntia*, figured in an accompanying photograph, is most



Echinocactus pilosus.

A fine form of the "Sea Urchin" Cactus.

strange in its design. As will be seen, and yet they will continue to be perfectly healthy. The whole plant resembles nothing so much as masses of the "vegetable sponge," which are such a common feature of room, and are useful subjects for in-

valids and those confined indoors to collect, as they are so dainty that the watering of the plants and the sponging away of the dust from the stems, is not in any sense of the word an arduous duty.

At the commencement it will probably be best to purchase six or a dozen plants; as a rule these being contained in a little greenhouse. Miniature Cacti are supplied by several dealers in this country, and are not infrequently to be seen at Covent Garden. A florist in any town could always obtain them for a purchaser, the cost of a collection complete in a greenhouse not being more than a few shillings.

There will surely be a desire to add to the collection of dainty Cacti, and it is gratifying to know that anyone may prepare these miniature specimens for himself. Practically speaking, almost any part of a Cactus plant will root, no matter what kind it may be. And a visit to a friend who is lucky enough to possess some large plants may be turned to account. Even the most jealous gardener will scarcely object to one's breaking off a small piece of a healthy shoot from a plant. The parts may be selected at almost any time of the year, although during the spring is best.

As soon as the portions for striking have been obtained, they must be carefully dibbled out into a pan of sandy soil. In quite a short while the young Cacti will be found to have rooted, and the time has then arrived for placing the baby plants into their permanent pot quarters, and here a little difficulty may arise. Most china-shop people can get the wee pots.

A sufficiency of fine garden mould should have been set aside, and it is advisable that this material be in a fairly moist condition. Although nothing much in the way of "crocking" such small pots can be attempted, two or three little lumps of charcoal may be placed in the bottom of each with advantage. The little Cacti must now be removed from the soil with great gentleness, so that no injury be done to the delicate roots. Fill the pots to within about an eighth of an inch of the rim. Then with a small chip of wood make a hole in the centre of the mould for the reception of the Cactus.

Additions to the Natural History Museum.

By R. Lydekker.

AN attempt has been made to exhibit in the British series of mammals the distinctive features of the English and Irish stoats and the weasel by displaying side by side the skins of these three prepared accord-

The latter are represented by eight specimens, from as many localities in England, Scotland, and Ireland, and exhibit the remarkable variation in the size, number, colour, shape, and arrangement of the spots. In one fine specimen from Ireland the markings are in the form of large, widely separated red spots of very irregular shape. In a second they take the form of large and closely approximated blackish rings, while in a third the rings are red and widely sundered.

It still remains for the field (or perhaps we should rather say the river) naturalist to explain these remarkable differences.

To pass from small to great, one of the most interesting recent additions to the museum is the cast of an almost complete skeleton of the great South American sabre-toothed tiger, or sabre-tooth, as it is better called, seeing that the creature has no more claim to the title of tiger than to that of lion. The sabre-tooths lived throughout the greater part of the Tertiary period, but did not obtain their maximum development, both as regards bodily size and length of tusk, till quite the close of that epoch, when — fortunately for mankind — they died out.

The largest of all appears to have been the present South American species,

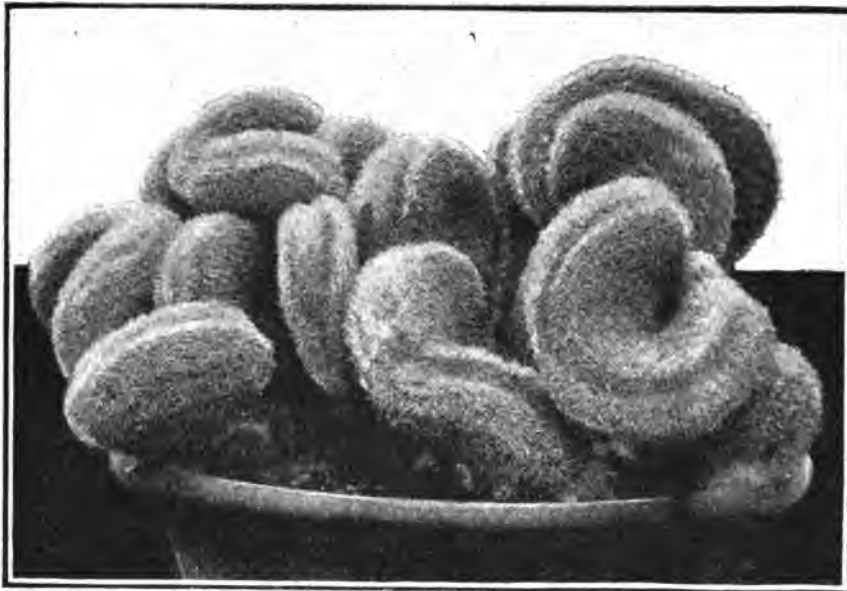
whose tusks are about six inches in length, of which some five inches projected below the line of the lower jaw when the mouth was closed. Other species nearly as large have, however, left their remains in the caves of our country.

It had long been a mystery how the sabre-tooths killed their prey, till a plausible suggestion was made by an American naturalist. If the mouth were opened in the ordinary manner biting would be prevented by the great tusks barring the aperture. The suggestion accordingly is that the lower jaw was dropped into a vertical position (and certain structural peculiarities favour this idea), and

the victim stabbed to death by the upper tusks as the fell destroyer held on to its back. When the slaughter was accomplished, the sabre-tooth may have lapped the blood of its prey, but must still apparently have been unable to tear up the carcase, and it has accordingly been suggested that it waited till decomposition was well advanced before completing its meal.

Possibly this may have been so, although it is in that case rather difficult to discover the use of the powerful cutting teeth behind

the tusks. The creature may have been strong enough to pull down the gigantic ground-sloths which were its contemporaries on the Argentine pampas.



A Rare and Unnamed Opuntia.

This plant resembles nothing so much as masses of vegetable sponge.

ing to the modern museum fashion and fixed back downwards to a board to show the undersurfaces of the body.

By this means the broad fact is made apparent that the two species of stoat differ from the weasel by the dark tail; while it is likewise shown that the Irish stoat differs from its English relative by the much larger extent of white on the lower surface, and also that the weasel is nearly intermediate in this respect between its two larger cousins. It may be hoped that this excellent system of real nature teaching will be still further developed in the near future.

Another interesting exhibit in connection



The Smallest Potted Plants in the World.

The thimble in the middle will give an idea of how tiny these Cacti are.

with the British fauna is now on view in a table-case in the fish gallery, where a number of specimen char, sea-trout, and ordinary trout are shown.

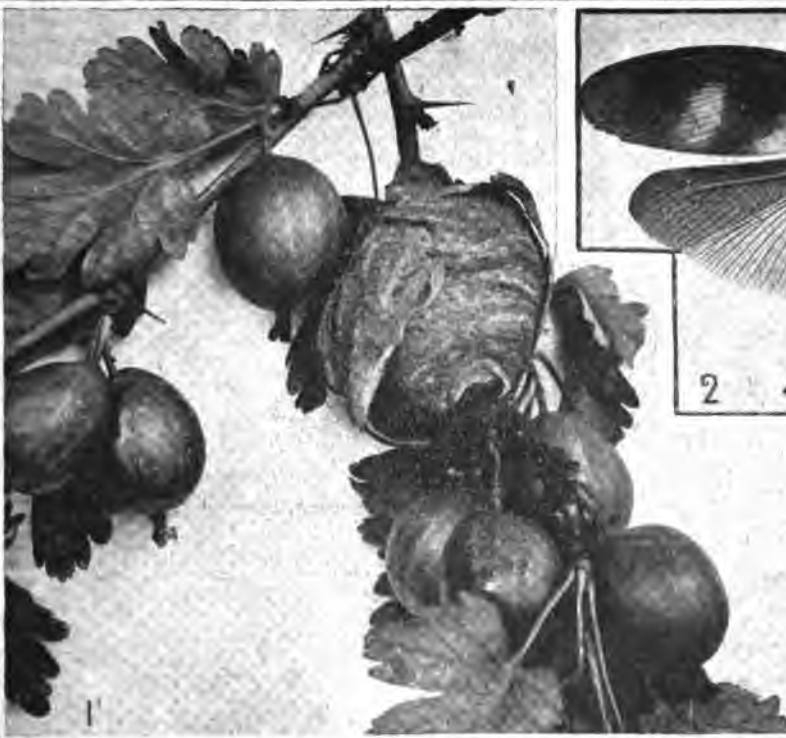
A Gallery of Prize Photographs.

Each of the first three photographs on this page has won the Guinea Prize.



1. A Winter Scene at Vancouver, British Columbia (Photo by Wright Parritt, sent by Mrs. B. Brown, Halifax). 2. At Full Gallop (D. Legard, Brompton, R.S.O.). 3. A Luscious Bunch of White Currants (Thomas Eveleigh, Hastings). 4. Black-headed Gull in Quest of Food (W. Pickup, Darwen).

Prize Photographs.



1. Wood Wasps' Nest in Gooseberry Bush (A. G. Robinson, Bradford). 2. *Blabera Gigantea*, a Specimen taken in Liverpool, probably came from the West Indies (Oscar Whittaker, Manchester). 3. Larva of the Castor Oil Silk Worm Moth, *Ailanthus cynthia* (E. Petrie, C.-on-M., Manchester). 4. Hawthorn Blossom (Robert Oliver, Edinburgh). 5. The Covey in the Snow (Arthur Quatremain, West Malvern).

The Wonderful Variations of Snail Shells.

An Unsolved Problem.

WHETHER the poet be, as some hold, divinely inspired, or whether he merely catches and crystallizes the half-expressed thoughts and beliefs of his fellow men, is a point we cannot pretend to decide. But it is certain that Tennyson expressed a great truth in a few words when he wrote the lines:

"No being on this earthly ball
Is like another, all in all."

A truth which is not half enough realised at the present day by students of animal and plant life, both lay and professional. We are still, very many of us, too inclined to regard the special objects of our study as so many fixed units or "species," though some go so far as to admit the existence of "sub-species."

But, far from being fixed, these units are, on the contrary, very unstable, very "variable," though this fact is more apparent among the species of some groups than of others. In the Mollusca the phenomena of variation are especially well marked, certain species exhibiting the most extraordinary range in the matter of size and shape, while others afford no less striking lessons in the matter of colouration.

The common dog-whelk (*Purpura lapillus*) of our coasts, for example, is an exceedingly variable species in regard to size and shape, while our common garden snail (*Helix aspersa*) and the hedge snail (*Helix nemoralis*) are scarcely less so; while in the matter of their markings they present very striking features, as may be seen in the accompanying illustrations.

While some are content to spend laborious days in the collection of such varieties, much as other people collect postage-stamps, there are many who desire rather to discover why these shells should vary. But this question is one much easier to ask than to answer.

Very potent factors in these variations, however, are changes in the environment—

the surroundings of the creatures.

The variations in the size of the shell of the dog-whelk, to which we have referred, well illustrate this. Thus, those from exposed situations, such as the Land's End and coasts of North Devon and Yorkshire, are stunted, and have a relatively short spire and large mouth, the latter serving to increase the power of adhering to the rocks and so resisting the force of the waves. Shells, on the other hand, from sheltered situations, are large in size, and have but a relatively small mouth.

Our common snail, *Helix aspersa*, when it occurs on sand hills and cliffs at the seaside, appears always to be dwarfed, giving rise to the variety known as *H.*

aspersa, var. *conoidea*. Near Bristol *H. aspersa* appears to be commonly very dark coloured; but near Bath very pale and much mottled. But why this should be so at present remains unexplained. If the "collector" were more often an observer as well, this riddle might perhaps be solved.

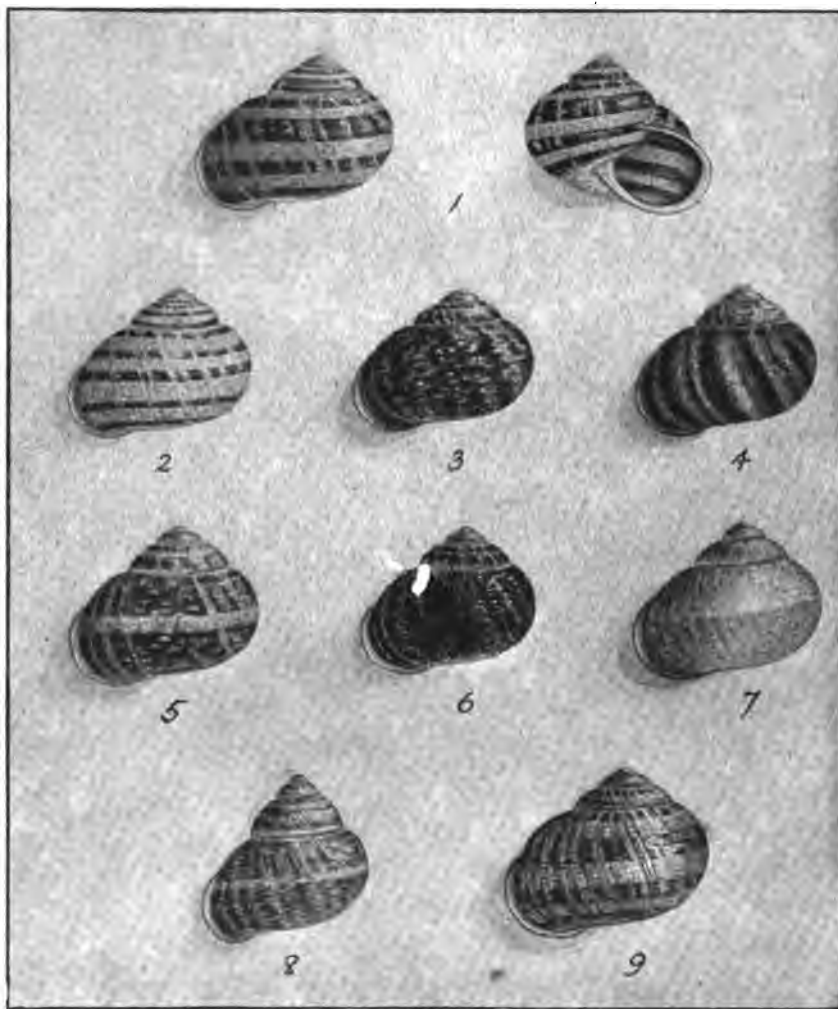
The range of variation in markings which a single species may show is well illustrated by the shells of the garden snail (*Helix aspersa*) given herewith. Here, it will be found they may vary in number, in width, and in direction, in the latter particular being either horizontal or vertical. While in some the bands are sharply defined, in others they are blurred, or "flamulated." Differences in shape can also

be seen here, as in Figs. 8 and 9. At least eight well-marked varieties of this species of snail are recognised by conchologists, each having a special Latin name.

In the beautiful black-lipped hedge snail (*Helix nemoralis*) the bands similarly vary considerably in number, and in width, or they may be altogether wanting. But we do not remember ever to have seen any examples of this species in which the bands were distributed vertically, nor any showing "flamulated" markings. Why is it that the bands here should be so constant in their direction?

Shell collectors have taken the trouble to devise elaborate formulæ for tabulating the number of these bands, so as to indicate those which are missing. Such tables are useful enough in their way, but they tell us very little after all. What we want now is a careful study of the nature of the surroundings in which the snails which exhibit these variations are found, supplemented by careful observations as to moisture, light, and the relative abundance of the variety.

But the matter is made all the more difficult on account of



Shells of the Garden Snail (*Helix aspersa*),

Showing the variations in the bands.

Fig. 1 may be taken as the type form, but even the type itself varies considerably in different parts of the country, both in the width of the bands and the colour of the shell. Fig. 2, var. *zonata*, has the five narrow bands distinct, on a pale yellowish ground. Var. *flammea* (Fig. 3) has broad flammules or flame-like markings all over the shell, and is a highly coloured and very handsome variety. In Fig. 4, var. *undulata*, the longitudinal wave-like markings in the line of growth are caused by the periodical strengthening of the colour glands after each temporary cessation of growth. When the upper three bands are joined together, and the lower two also, leaving a pale zone of the body-colour round the periphery, as in Fig. 5, the variety is called *albo-fasciata*. Fig. 6, var. *nigrescens*, has all the bands joined together, giving the shell a very dark appearance. The albino form of this species is shown at Fig. 7, it has pale yellowish markings on a whitish ground, and is called var. *exalbida*. Figs. 8 and 9 are examples of variation in the form of the shell, the former, var. *conoidea*, has a raised spire; the latter, var. *globosa*, is much inflated, and often attains to a large size in a favourable environment. Other recognised varieties are *minor*, *tenuior*, and *unicolor*, the names being explanatory.

the fact that in many cases two or three varieties may occur in the same locality. Evidently, then, this aspect of the study of snail shells deserves more attention than it has hitherto received.

Some interesting experiments have indeed been made, by way of determining some of the possible causes of variation in snail shells. Thus the naturalist Karl Semper showed that the size of the shells of *Limnea stagnalis* may be profoundly influenced by the volume of water in which the animal lives.

He made two series of experiments. In one he separated the animals from the same mass of eggs immediately they were hatched, and placed them simultaneously in unequal bodies of water. In the other he placed two different quantities of animals, from the same mass of eggs, in two aquaria of equal size.

All the conditions of existence, and, above all, the supply of food, were kept at the optimum. Consequently, all the animals were kept under equally favourable conditions, irrespective only of the volume of water which fell to each snail's share.

In both experiments the results were similar; the smaller the volume of water which fell to the share of each animal the shorter the shell remained. It made no difference with regard to the size of the shell, whether each isolated individual had from the first a definite quantity of water allowed to it, as in the first series of experiments, or whether several individuals living together had a large volume of water to share among them in the same proportion.

By way of contrast we may mention that the "lampshell" *Limnæa stagnalis* found to-day in the Indo-Pacific and adjacent seas is indistinguishable from the oldest geological specimens.

Hibernation of the Honey Bee.

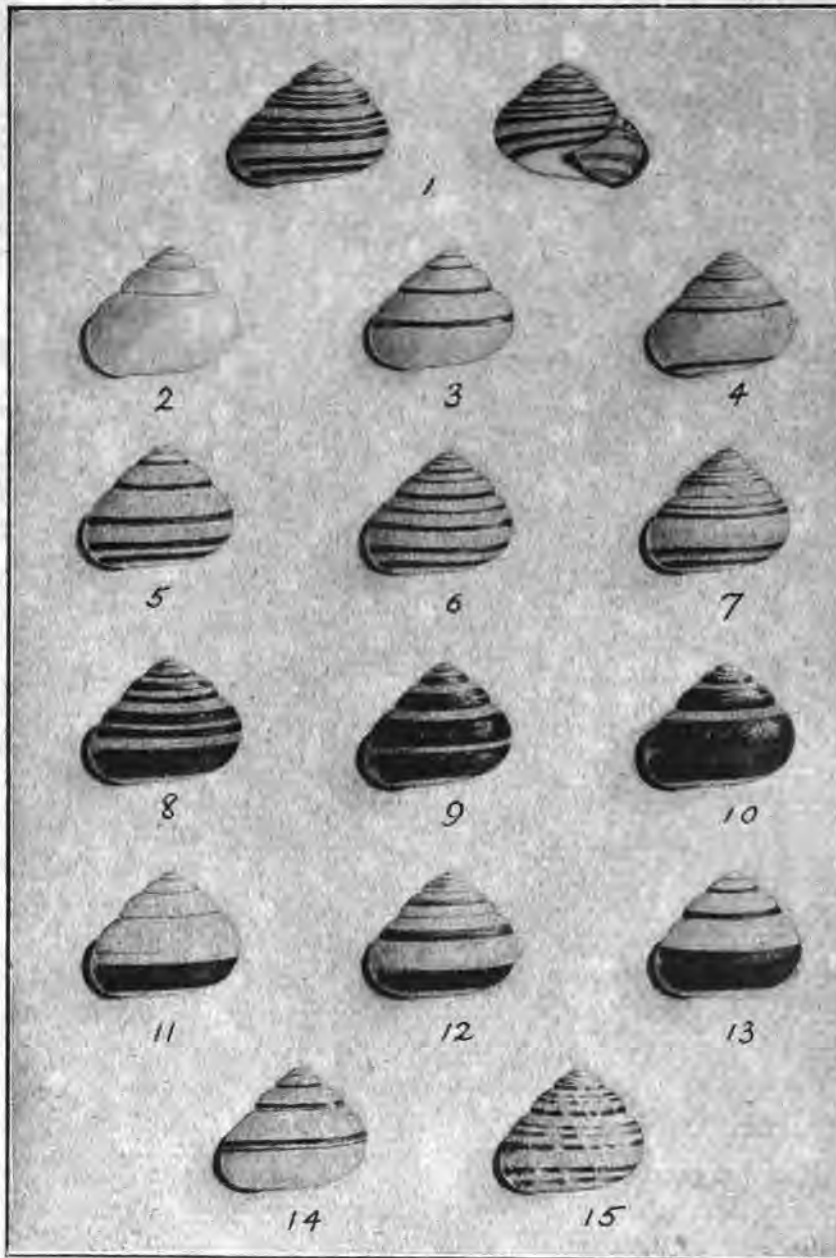
THE approach of winter brings prominently before our notice the different methods by which the various

melifica), which I now propose shortly to consider, is one of the most perfect that Dame Nature has taught her many and various children. It is hardly necessary to explain that the honey bee is a social insect living in populous and well-ordered communities, communities in which the individual is nothing, the well-being of the tribe everything, in which self-sacrifice is not merely the isolated expression of supererogatory goodness, as it is with us, but the daily practice of every member.

The summer is over; the flowering plants and trees that have yielded their nectar and pollen in such open-handed profusion are withered or lifeless; no longer do the busy workers, inspired by the glories of the earth and sky, flash and tumble to and from their daily toil; but during the hours of plenty, the months of famine have not been forgotten, and the now sobered toilers can look with pride and satisfaction, if indeed their feelings can be expressed in human terms, on row upon row, column after column, well-stored and ripened, of their winter stores of honey.

September is past, and when the chills of grey October are filling the air with impassable cold and dampness, the huge mass of bees that has heretofore filled their dwelling almost to overflowing, begins to shrink back upon itself, and to conserve the heat that is necessary for the protection of the Queen, upon whose well-being the future of the hive so intimately depends. Clustering there in the darkness with their golden stores about them, they pass through the long and weary months.

As winter progresses the cluster contracts still more. The old bees are first to drop numbed and helpless to their death, and at the approach of spring it may be that not more than half have survived.



Shells of the black-lipped Hedge Snail (*Helix nemoralis*),
Showing the variations in the bands.

For convenience in describing these varieties the following formula has been arranged: In the type (Fig. 1) the bands are numbered 12345 beginning at the top band and numbering downwards. When a band is dropped a cypher 0 is used instead of the numeral signifying that band. Fig. 2 has all five bands missing, so the formula reads 00000. Fig. 3, all except the third band, are absent, formula 00300; these two are very common forms. Figs. 4, 5, and 6 are further examples of dropped bands, the formulæ being 10005, 00345, and 10345 respectively. Fig. 7 is rare, the third band is usually present where banding is found, in this case it is the only one absent, 12045. Coalesced bands are denoted by enclosing the numerals, standing for the bands joined together, in brackets; thus in Fig. 8 the first and second are joined, and the fourth and fifth also, the formula is (12)3(45). Figs. 9 and 10 are common forms of coalesced bands (123)(45) and (12345). Figs. 11, 12, and 13 are examples of shells having both dropped and coalesced bands, they, especially the latter, are rare, and the formulæ run 000(45), (12)0(45), and 00(345) respectively. Fig. 14 is an instance of what is called a split band, the third band having a narrow bandlet split off its lower edge; in the formula a small numeral is placed after the ordinary one, thus 003.00. If the split had occurred off its upper edge it would have read 003.00. In cases where the bands are broken up into spots, or only traces of them exist, a colon is used in place of the numeral, as in Fig. 15, which has all the bands irregular with a formula of :::::

families of insects succeed in carrying on the life of their race through the hours of cold and famine.

The method of the honey bee (*Apis*

contracts still more. The old bees are first to drop numbed and helpless to their death, and at the approach of spring it may be that not more than half have survived.

Our Common Owls.

It is impossible to say at what age an owl is most delightful in aspect, or which of our common owls makes the most entertaining pet. You like each one best until you have made acquaintance with another.

The great charm of the brown owl (also

few hours he looked the most comical object imaginable, with huge eyes and powerful claws, but a body scarcely bigger than a thrush.

The brown-owl is the bird which hoots at night—uttering a long-drawn “hoooo-hooo, hoo-hoo-hoo-hoooo.” This his wife

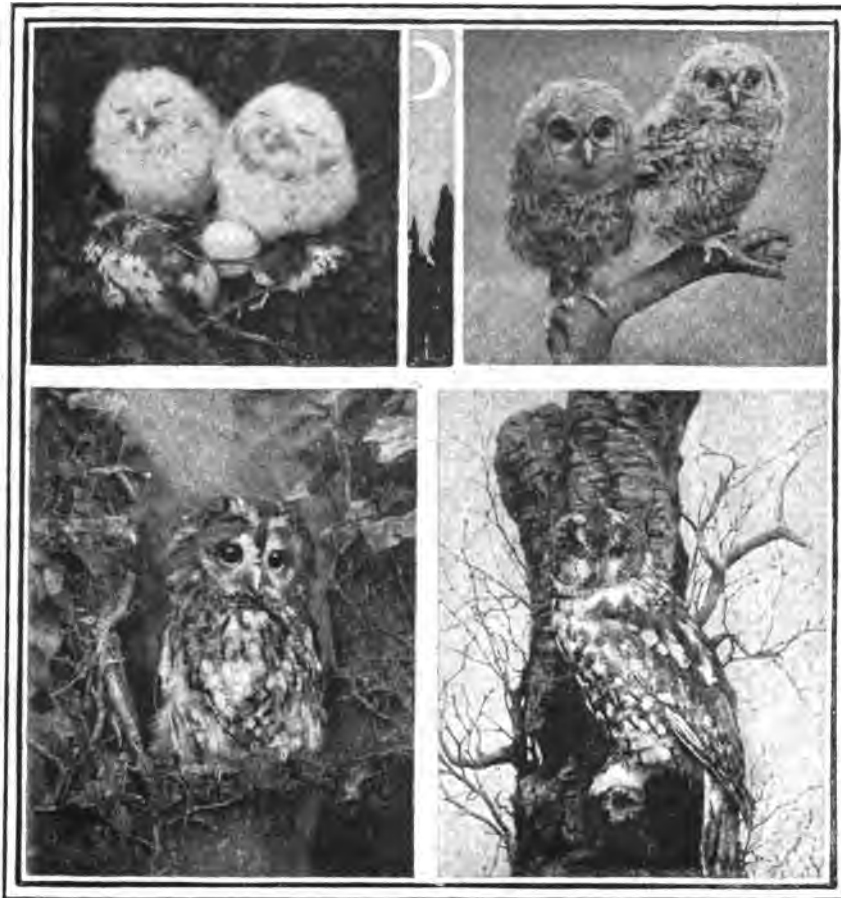
“Kewick” and “Hooo-hooo” are, of course, the “Tuwhit, tuwhoo” of the poets.

Like all other owls, the brown owl is remarkably hardy in captivity and easily fed. Nor can it dislike captivity, for a case occurred lately at Warham, in Norfolk, where a wild brown owl deserted its wild mate and forced its way into a cage where a tame owl was kept. In spite of its mate's nightly lamentations and the opening left for it to resume its liberty, if it wished, it remained in the cage as contentedly as though it had never known what it was to be free.

In a wild state the brown owl is often peculiarly violent in defence of the vicinity of its nest, attacking passers-by with great courage, knocking off their caps and occasionally even lacerating their faces. By such conduct doubtless it often saves its home from some of its natural enemies; and its inherited instinct has no power of discrimination between these and human beings, who can retaliate with shot guns.

The Barn Owl (also called the White Owl and the Screech Owl, and in science *Strix flammea*) differs widely in many ways from the brown owl. Instead of hunting the woods and shrubberies for startled birds, the barn owl finds its best hunting-ground in and around farm buildings and rick yards; where it comes suddenly, silently, and swiftly round the corner and carries off a rat or mouse before the little vermin has had time to guess what is happening. Nor has it much time for reflection afterwards, for the barn owl's powerful claws nip its dying squeak in the first syllable.

If comfortable philosophy seems the characteristic of the brown owl, the barn owl's must be excessive wisdom—wisdom indeed so excessive as to amount almost to imbecility. In our wanderings through the world we have all met human barn owls; old men who comfortably fill a little private niche of their own, as the barn owl will fill a hole in church-tower or hollow tree. They are always full of out-of-the-way knowledge, and are doing extremely useful work; but they are quite unfitted to take care of themselves in the daylight of the hustling world.



[Photos by T. A. Metcalfe, G. Steniate and G. Parkin.]

Brown Owls at various ages.

Those in the first picture were three weeks old.

called the wood owl or tawny owl, and in science *Syrnium aluco*) is its fluffiness, which gives it a rounded and completely comfortable character, and seems to make it superior to all the troubles and contingencies of life. Even when disturbed from its roosting-place into the garish daylight, this owl will sit motionless on some large bough of a tree, solemnly blinking at the world at large, for it is characteristic of the brown owl that it is constantly passing a pale membrane over its eyes, thus seeming to suggest that nothing which it sees is worthy of a steady gaze.

Sometimes, however, this philosophic attitude of the brown owl leads to absurd consequences. One, for instance, which had flown abroad in daylight, found its way through an open door into a scullery, where it alighted on the floor, immediately beneath a slowly-dripping tap. Drip-drip-drip, fell the drops one by one on the owl's head, but he was too philosophic to move for such a trifle; and gradually all his feathers became soaked and clung tightly to his body, with the result that after a

often answers with a sharp, loud cry o. “Kewick!” The latter note is also used by the young when calling for food.



[Photo. by T. J. Smith.]



[Photo by T. A. Metcalfe.]

Young Barn Owls.

When by misfortune the barn owl is driven abroad in the daytime, you may see it hunted from place to place by a clamorous mob of small birds, until at last it finds its way into some dark shed or thick ivy tree, where the small birds are wise enough not to follow.

In captivity barn owls are very lovable, with their queer solemn ways and absurd antics. Note in one of these pictures how a mother owl with spread wings and menacing attitude tries to scare away the photographer from the nest, where her eldest child, although still decorated with infantile fluff upon its head, seems already bigger than its parent.

These demonstrations of hostility mean little, however; and you may generally handle a barn owl without injury of any kind. Especially, of course, is this the case when the birds are young; for then they submit to capture so completely that they will remain motionless in whatever position you may chance to place them on the ground.

Although the barn owl seems all white when on the wing at dusk, the plumage of its back is a beautiful tawny colour; and this often causes confusion with the "tawny owl," as the brown owl is usually called in books. Similarly the barn owl's name of "white owl" tends to confusion with the snowy owl. I think, therefore, that "brown owl" or "wood owl," and "barn owl" or "screech owl," should be the names retained for these two common owls respectively.

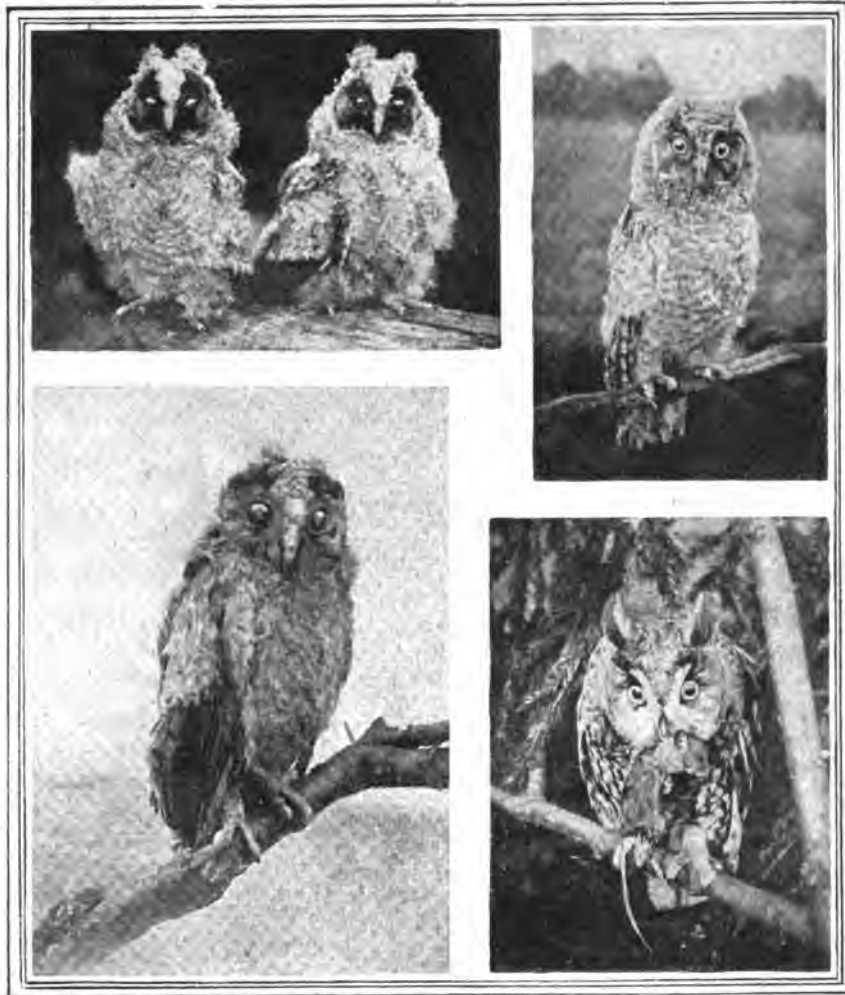
The barn owl, be it remembered, is the most useful bird which the land can have; and whoever kills or traps one does a large injury to the neighbourhood.

The ordinary note of the barn owl is a wheezy sort of screech; and the females and young appear (although this is not, perhaps, certain) to use a shrill, sharp cry of "Keewee," not unlike the "Kewick" of the brown owl, but with the second syllable less marked. The brown owl is also believed to be the author of that curious laughing or cackling note which often comes to us out of the darkness of a summer night.

Last of our three common British kinds is the long-eared owl, *Asio otus*; though perhaps some might be surprised to hear

they are comparatively so little known is that they seldom leave their woodland retreats, and are so much less noisy than the brown and barn owls.

cry, with a very human intonation, sounding like "Rip! rip! rip!" This presumably corresponds to the "Kewick!" of the barn owl; but here this difficulty arises,



[Photos by B. Hanley, S. Smith and T. A. Melcalfe.]

Long-eared Owls at various ages.

Sometimes, however, in passing under the dark shadow of the pines towards evening you will hear "Wooo, wooo," a curious muffled sound, like the distant baying of a dog. This is the call of the

that the same individual long-eared owl will use the note "Wooo, wooo," and the cry "Rip, rip, rip"; whereas it is generally supposed that the hooting of the brown owl is the call of the adult male and "Kewick" the cry of the female and young. From all this it is very clear that we have great need of more precise knowledge of the natural voices of our British owls.

Of the young long-eared owls represented in these pictures there is little to be said. They are always most delightful little objects, with the aspect of being greatly surprised and rather shocked at everything which they see.

Ordinarily, too, the old bird sits bolt upright, making himself very long and thin, as though holding aloof from the world at large. Sometimes, on the other hand, he will watch you, as you pass beneath his roosting-tree, with all the interest of a cat watching a dog go by. At close quarters—as seen in the last illustration—this owl spreads itself out very threateningly, and an angry fire glows in its eyes. Nor is this all bluff, as in the case of the barn owl; for a long-eared owl in captivity will often spring angrily at the face of anyone who stares too persistently through the cage-bars.



[Photo. by C. D. Head.]



[Photo. by T. A. Melcalfe.]

Older Barn Owls.

it described as "common." Yet there are probably very few pinewoods of any extent in the country which have not long-eared owls in residence; and the reason why

long-eared owl, corresponding to the loud hoot of the brown owl and the wheezy screech of the barn owl. In addition, the long-eared owl sometimes uses a sharp

Amateur Photography.

OUTDOOR WORK IN WINTER.

By J. H. CRABTREE, F.R.P.S.

Illustrated from Photographs by the Author.

Its Fascinations.

FOR the naturalist photographer, and, indeed, for all devotees of camera work, there is a peculiar attractiveness about winter photography. We

and the dark objects (trees); in the second class the dark objects are just before the camera and the intervening atmosphere is practically eliminated. The difference is of great importance, and calls for special



In Winter's Grip.

A fine specimen of winter photography.

are in the open air, in the fresh, crisp, frosty breeze; or among the playful snow-flakes; or by the crackling ice-sheets of some field-pond; or before the icy stalactites pending from some rocky cliff; or we are stalking through the filmy haze of a morning mist. All are peculiar, transient, and, therefore, the more interesting.

In Winter's Grip.

For variety of subjects, winter photography has perhaps no parallel; and among these the rendering of the open landscape as it appears when held "in winter's grip" has always been, and is still, the most popular. This theme may be found in the country-side from John o' Groats to Land's End. Even if we live in the heart of a big city, thirty minutes by car or tram will bring us to open ground where trees and shrubs are decked in their silvery garb, and where tiny rivulets meander to and fro under a filmy covering of sparkling ice. Open landscapes may be divided into two sections:—

1. Wide stretches of snow broken only by the shadows of its undulations, with distant buildings or trees.

2. Snow well broken up, with trees and shrubs in the immediate foreground and middle distance.

In the first section we have a great stretch of atmosphere between the camera

treatment. Disregard this point and you will court failure. Exposure on "open stretches" should not be more than one half that for "near trees," and the developer should be carefully prepared for each case.

For scenes under Class 1, I expose in fair light for 1-20th of a second; in poor light $\frac{1}{2}$ of a second; and as I prefer a vigorous development to bring out the multitude of intervening shadows in proper gradation, I develop with Rodinal, 4 drams in 2 oz. of water, and add 4 or 5 drops of a ten-per-cent. solution of potassium bromide.

Class 2 requires from 1-10th of a second to a second, according to actinic-ity of light; and development must be guarded, not hurried; not too vigorous, or we shall get an objectionable rendering of jet-black lines against a white sky. We must work to avoid this false result.

their boles. Bring these to view. For this purpose I use a weak developer of pyro-soda or quinol-metol, about one-third the usual strength, and omit potassium bromide altogether. Avoid density and contrast, and strive for delicate detail. Snow is seldom white; trees are not black. We have to deal with a magnificent succession of gentle gradations from white to dark grey, eschewing black as much as possible.

Hoar Frost.

Next to open landscape the treatment of hoar frost is most popular. And really there are few things in nature more charming than a beautiful picture of hoar frost as it appears just before the sun's rays have melted its myriads of needle-points. Hence, if we would secure these gems of natural art we must be abroad early and we must carry on our operations with genuine morning vigour.

The best hoar frost scenes are to be found on the smaller trees, shrubs, and long grasses. Large, tall trees do not lend themselves generally to the best results, owing to the icicles being at so great a distance from the camera; these trees seem to be covered with snow rather than hoar frost. With shrubs and grasses, however, we can get close to the subject and clearly distinguish those exquisite points of ice stretching in countless number from leaves, fronds, blades, and exposed roots.

Tilt the camera, if necessary, so as to obtain as full a view as possible of the frost-itself; sky-portions may be eliminated. Expose for one to three seconds, according to light, and use a pyro-soda developer diluted 50 per cent., adding 2 drams of Rodinal for each ounce of developer used. Omit potassium bromide altogether. Get a thin, well-graded negative. This should show clearly the delicate shadows cast by the icicles, and the darker shadows of the shrubs themselves will not be blocked.

"Stalactites and Stalagmites."

Not of limestone, of course, but of ice



The Bend of the Stream.

The Woodland Bridge.

Two more specimens of snow effects.

We want clear detail in the nearest and snow. We are all acquainted with some pretty waterfall in the dells and woodlands. These falls are attractive in

some pretty waterfall in the dells and woodlands. These falls are attractive in

summer, but much more so in winter, when the long, narrowing icicles hang down from the head of the fall. In frosty weather these icy stalactites daily increase in length and girth. Water dribbles from their points and is frozen where it drops, forming an admirable imitation of the stalagmite we see in a limestone cavern.

Whenever an opportunity occurs for photographing these unique subjects turn out your camera forthwith and secure records which will give pleasure and profit for many a long day. Take the photograph early in the morning; give 3 to 5 seconds' exposure, according to lighting and nature of the background; and develop with pyro-soda, well diluted, adding 3 drams of rodinal to each ounce of developer. Remember that the icicles must appear shapely—round or oval—on the finished print, and not as white streaks.

Falling Snow.

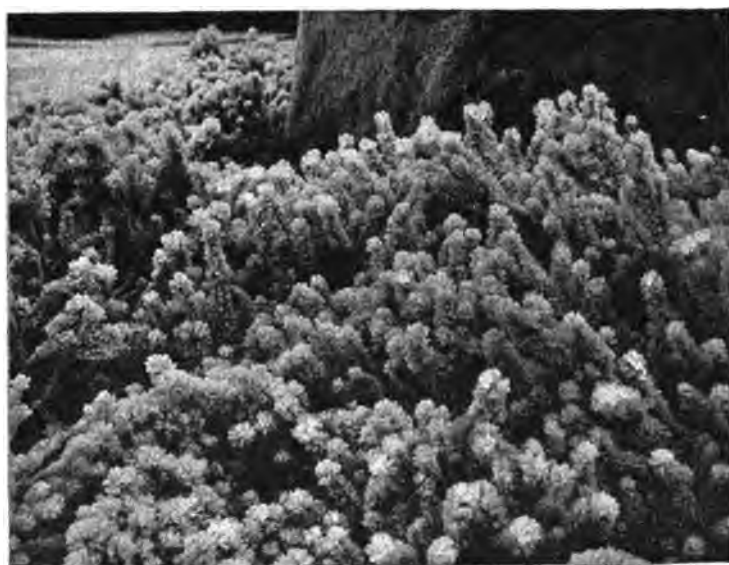
Here is a chance for the hand-camera. Select a "fall" when the lighting is fairly good—just before noon—and when the flakes are of large size. With small flakes and driving sleet the result is disappointing, even with the best efforts.

For a convenient view point select a wide street, or a street corner preferably, having a dark-coloured building opposite. This will afford good relief to the flakes and make them appear frigidly real. The result will be very different from a "winter" photograph faked by dropping flour or sand on the glass side of the negative. Include in the view a passing milkfloat, horse and cart, or waggon, just to relieve the street area.

The exposure must, of course, be adapted to the moving objects and the falling snow; 1-50th, 1-20th of a second will suffice at F/8 with special rapid plates.

A "Nota Bene" on Plates.

All plates used for ice and snow subjects must be backed if the best results are desired. After many experiments with



Beautiful Hoar Frost Effects.

The first is Irish Heath, the second Rhododendrons, and the last "Cats' Tails."

backed and unbacked plates, with ordinaries and orthochromatics, with plates slow, medium, extra-rapid, and special-sensitive, my preference goes to the

orthochromatic (with screen), backed, extra-rapid for general work.

For work of a special character, when light is below the average, I use the fastest of plates, such as the "special sensitive." Do not make any mistake as to this "N.B." The plate may not be "everything," but it is without doubt the all-important factor in winter photography. Slow plates give too much contrast. Unbacked plates are often smeared with small halos which when aggregated make the negative flat and unprintable.

The orthochromatic plate deals with the blue colouring found in the atmosphere and reflected from the icicles; a three-times screen used with the plate will correct this. All these precautions may mean extra cost, but it is the cheaper course. My plates cost 1s. 6d. per dozen quarters, and 3s. for halves; but I grudge not a farthing. The result compensates.

Printing Medium.

For a purely pictorial rendering, carbon and platinum are "the things." But the average amateur will produce pleasing pictures on P.O.P. and gaslight papers. Where an atmospheric effect is required, such as with ample foreground and distant trees, use matt-surfaced papers. When detailed hoar frost on near shrubs is to be shown, use the glossy paper and squeegee it to plate-glass; a highly "polished" print will thus be secured full of elegant tracery and sparkling finesse, amply suited for a frontispiece in our album of "Winter Scenes."

"Familiar Trees," by G. S. Boulger, F.L.S., etc., issued in revised and enlarged form by Messrs. Cassell and Co. at 6s., has some very beautiful and accurate coloured drawings by A. Fairfax Muckley, and some very good photographs. There are also some coloured

drawings and some photographs which do not deserve the same high praise. A good deal of information, however, is given about the trees selected for description and illustration.

From a Gamekeeper's Notebook.

By "GAMEKEEPER."

Gapes in Pheasants and Partridges.

SUPPLEMENTING my recent notes concerning "gapes," I should like to give some further information as to remedies when the sufferers are pheasants and partridges, which, of course, cannot be treated so easily as the more controllable chickens.

When afflicted game birds are living in a genuinely wild state I confess that hitherto all attempts to doctor them have failed. Each year tens of thousands (of partridges especially) are choked by gape-worms. The only thing which the keeper can do to help his wild birds is frequently to introduce fresh blood among his stock birds, thus securing strong birds, which, to some extent, are able to weather attacks which no human means can prevent.

But so long as his hand-reared birds will allow themselves to be shut in their coops at night the keeper is able to prevent serious losses by timely treatment. I have noticed, however, that birds which have survived "blindness" hardly ever pull through should they be subsequently attacked by gapes. Disheartening, indeed, is the prospect of the keeper when gapes follow on the heels of blindness.

The Difficulties of Doctoring.

Seeing that the only really safe and effective cure for gapes lies in giving each ailing bird something of a volatile nature, it is at once apparent that to doctor birds which are at large and daily growing more independent is the chief difficulty. The man who invents a certain cure for gapes in game birds at large in the woods and fields, and can insure their taking it—which is not the least difficult part of the business—will discover at the same time a very short cut to millionaire-dom.

Meanwhile, the keeper struggles on as best he may. In his garden you may notice that extra attention is bestowed on a goodly patch of onions; and in the summer you may often meet a keeper carrying a huge bundle of onions, which he has annexed during his travels. Now, few would be so bold as to deny the volatile power of chopped onions. And so the keeper mixes a liberal portion of minced onion with each meal he prepares for his precious birds, should they show a sign of gapes; and he thinks, too, that onions are good for their general health.

Another remedy which is undoubtedly useful, provided the birds take it without delay, is a mixture of laudanum and linseed oil. The keeper's prescription reads as follows: To half a gallon of linseed oil add sixpennyworth of laudanum, and cork tightly. Having prepared the necessary quantity of appetising food, anoint it liberally with the aforesaid mixture, and distribute immediately to the gaping birds, which must have been previously "kept short," so that they pick up the medicated food with the least possible delay; that is to say, before the spirit of opium has evaporated. But before next summer I hope the man will have arisen who will relieve me from further worry—at least in the form of gapes.

A Sparring Match in Mid-air.

It was one of those glorious afternoons in October which justify the summer of St. Luke. I came silently down a ride, and stopped where it led out of the wood to see what I could see, as is my custom. At first I saw nothing but the soft expanse of the blue heavens above, while below on all sides were the matchless shades of Nature's autumn garment. Then my ear caught the cry of a distant rook; it was the cry rooks make when they dart and dive in play, and which resembles the crooning call of the moorhen. I was not long in spotting the rook at a great height in the air, and a hawk was close upon it.

Unfortunately, I had no field-glass with me; but so far as I could judge the hawk was a cock sparrow-hawk. I watched the birds for three-quarters of an hour. They remained at about the same altitude the whole time, but each tried to keep above the other, and whenever the hawk got above the rook he seemed to make a playful pretence at striking, which was always acknowledged by the rook with an emphatic squawk, as it in turn rose above its dangerous playmate.

Time prevented me from watching the finish of the proceedings, but I came to the conclusion that, though both birds were afraid of one another, they had arrived at a sort of mutual understanding that sparring practice was good fun on so glorious an afternoon. I have never yet known a mature rook to fall a victim either to a kestrel or a sparrow-hawk.

The Week's Wild Life in Pictures.

(See page 21.)

THE brambling, or bramble-finch (1)—often also called the mountain-finch—does not breed in Britain, but comes over from Norway and further north-east to spend the winter with us, in very variable numbers. Last year the bramblings were very abundant, and promise to be equally abundant this winter. They are very like chaffinches in many ways, but may easily be distinguished by the bright chestnut on their shoulders. When flying they show a conspicuous white patch above the tail; and their note is very distinctive, being a rather harsh "chay-er" instead of the brisk "twink, twink" of the chaffinch. The special food of the brambling in winter is beech mast; and if there are any bramblings in the neighbourhood you may look for them with confidence among beech trees.

2. What the beech nuts are to the bramblings the hawthorn berries or "haws" are to the foreign thrushes—the redwings and the fieldfares—which also come from Norway, etc., to spend the winter in Britain. At first there seems to be more than plenty for all; but the ruddy stores quickly disappear until only here and there you will find a solitary clump or tree still covered with berries, while all the others are stripped bare. These are the re-

serve stores of the missel thrushes, each of which has selected a whole tree or two for itself; and, relying upon its extra ounce or two of fighting weight, drives all the blackbirds, thrushes, redwings, and fieldfares away, thus keeping its store of food well into the winter.

3. Bream may be distinguished from other freshwater fish by their deep shape and compressed body below, with a wide fin under the tail. In British waters only two kinds of bream are found: the common bream, which has a golden yellow lustre, whence it is also called the carp bream, and the bream flat (shown in our illustration), which has no such lustre, but is bluish white on the sides, whence it is often called the white bream. Bream swim in shoals, and are miscellaneous feeders, growing rather quickly to a good size.

4. Henbane is one of our most interesting plants, springing up and flourishing in unexpected places, and refusing to grow where planted. Its flowers are very curious—rather large and greenish, netted with purple veins. Later, comes the quaint fruit, like rows of spiky caskets with round lids. Long after the lids have fallen off and released the stores of coarse grey seeds the empty seed-vessels remain a picturesque object of interest in winter walks. In stony soil which suits it the henbane grows to the dimensions of a considerable bush with many long fruiting spikes; but it is only an annual, and dies in autumn.

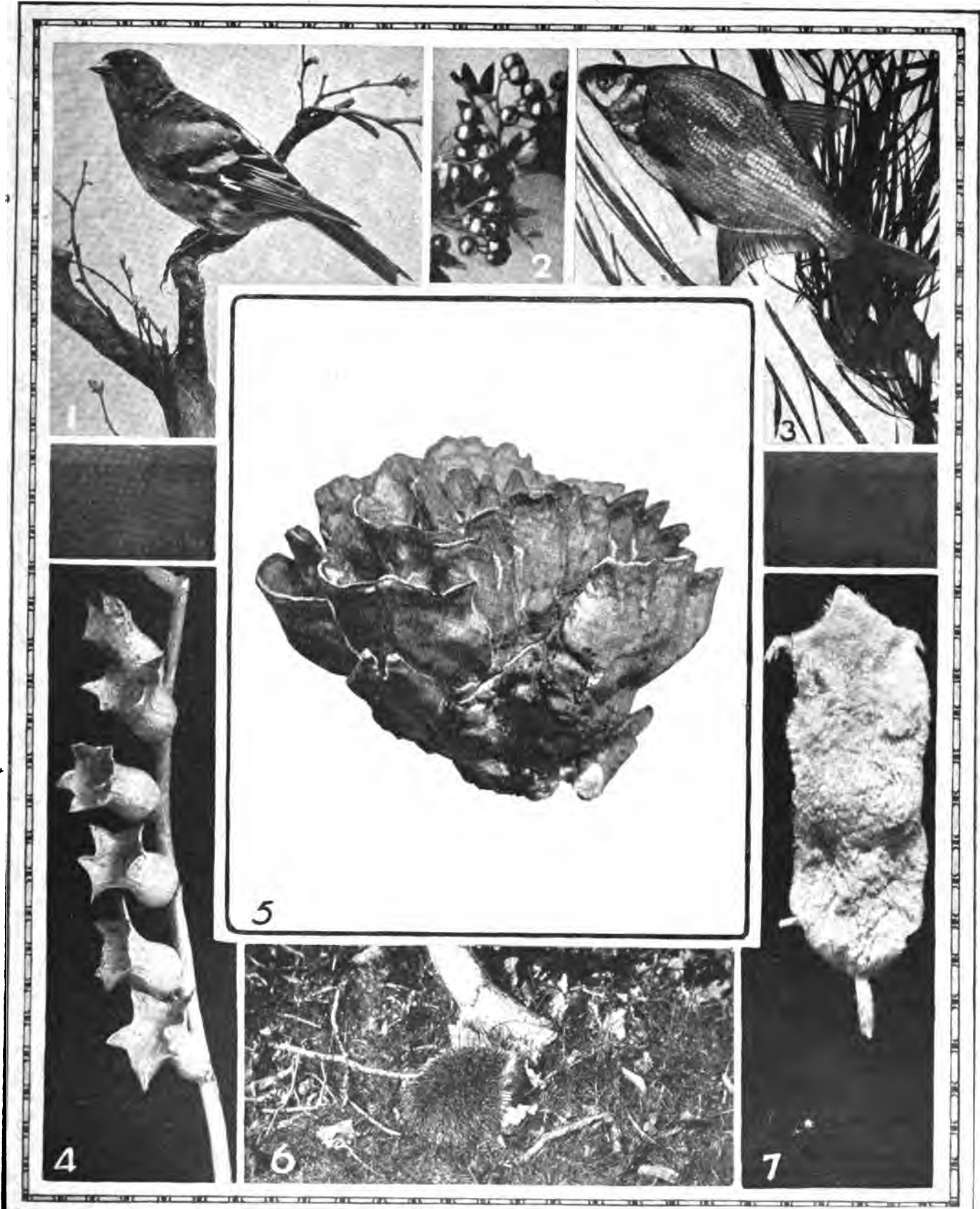
5. The giant-tuft fungus is one of the 221 different British kinds which are classed as "good to eat." When very young it certainly is eaten abroad; but even then it is rather tough, and persons who eat it in England are probably few. It is not a common fungus, but may now and then be found growing at the foot of an old tree in a single clump of many branches, the whole often measuring two or three feet across. The upper side of each branch varies with age from bright brown to almost black; the underside is pale.

6. As a rule, the hedgehog manages to hide himself snugly away before the end of October; but his hibernation is by no means always uninterrupted. For reasons not fully understood, he will issue from his hiding-place now and then during the winter—indeed, his smudgy track has been found upon snow in December and January—and will sometimes seek a new one. The margins of woodland, where there is abundance of dead leaves and dry sticks, are his favourite winter retreats.

7. There is no other British mammal so variable in colour as the mole. Ordinarily, its fur is dusky black or dark bluish grey, each hair being beautifully ringed with alternate colours; but frequently moles are found of an olive tint, pale grey, cream colour, orange, golden, or piebald. The picture represents a mole from Norfolk with bright golden fur, and cream coloured moles are found in Richmond Park, near London. Pure white moles, black moles with white heads, black moles with orange throats, white moles with brown throats, etc., have also been met with. No doubt, all this variation is rendered possible because the mole lives in the dark, and, when adult, seems practically blind. Therefore, its colour can matter little to itself, its friends or its enemies, and Nature grows careless in the matter.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 20.)



1. Brambling, *Fringilla montifringilla* (G. Parkin). 2. Haws on Hawthorn Berries, *Crataegus oxyacantha* (B. Hanley). 3. Bream-flat or White Bream, *Abramis blicca* (S. and W. Johnson). 4. Dry Seed-vessels of Henbane, *Hyoscyamus niger* (G. B. Norreys). 5. Giant-tuft Fungus, *Polyporus giganteus* (G. Parkin). 6. The Retreat of the Hedgehog, *Erinaceus europæus* (J. H. Crabtree). 7. Golden Variety of Common Mole, *Talpa europæa* (G. B. Norreys).

The Lost Meteor Swarm.

By NORMAN LATTEY.

FORTY years ago, on the night of November 13th, the world witnessed a display of celestial fireworks such as mortal man may never see again. It seems almost certain the present generation will not.

The spectacle was simply amazing. The entire sky rained fire, the phenomenon lasting several hours. Thousands of darting stars seemed to precipitate themselves from the heavens in all directions, falling as silently as snowflakes in a continuous golden shower.

Just thirty-three years previously the same thing occurred, only even more brilliantly, and a search showed that its recurrence could be traced back wards for over a thousand years. History records that on October 19th, A.D. 902, called "the year of the stars," while the tyrant Ibrahim lay dying before Cozenza, "by the judgment of God," beholders saw with consternation the stars dropping from their places in the skies.

The thirty-three year period being established a return was confidently expected in 1899, but expectations were grievously disappointed. A few hundred meteors were certainly seen, but it was evident that the pageant had suffered some delay.

Even the following years proved barren, and it soon became evident that for some mysterious reason the earth now just misses the densely crowded section of the stream of tiny cosmic fragments circulating round the sun, contact with which produces the displays.

This shifting of the swarm was probably due to the retarding influence of one of the larger planets, its position hitherto having doubtless been brought about in a similar manner. Curiously enough there is a comet moving along the same path in space as the meteors, which, coupled with the fact that other streams have comets associated with them, indicates some obscure connection between them.

Observation soon detected an apparent divergence from one spot in the sky of the

multitude of luminous shafts flying in all directions. This has been termed the radiant.

It is, of course, merely due to an effect of perspective in the same way as all the lines of a building appear to converge together in a "vanishing point." In the case of the November meteors, the

chance of a repetition of the outbursts of 1833 and 1866. Many fine "shooting stars" are, however, certain to be seen, and their recognition as true Leonids may be established by their swiftness of flight, for the stream is moving *against* the motion of the earth, and consequently impact with our atmosphere takes place at a combined velocity of 44 miles a second.

The Andromedids, on the other hand, move in more leisurely fashion, seeming to sail slowly across the sky. Fortunately there will be no moon on the night of the 16th, and it will set early during the next few evenings.

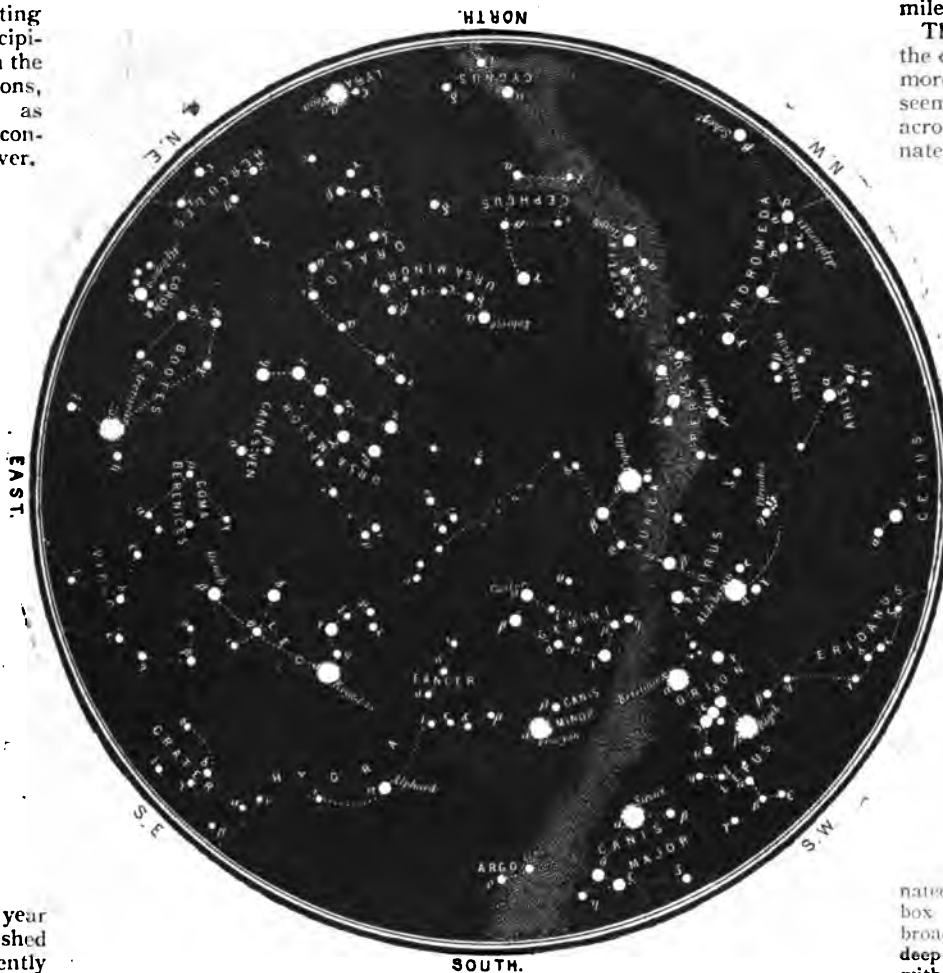


Chart showing the Position of the Radiant Point of the Leonid Meteors in the early morning of November 16th.

radiant lies on the constellation Leo, hence the appellation "Leonids."

The exact situation is within the well-known "Sickle," of which the bright star *Regulus* forms the handle. Leo rises at this time of the year in the northeast about midnight.

Advance couriers may be looked for during the evening of the 15th, but according to Mr. Denning, the greatest living authority in this country on meteors, the maximum is not expected to occur until early on the morning of the 16th.

Another but lesser shower, the Andromedids, is due to issue from the constellation Andromeda, which will be almost overhead on the evenings of the 18th to 21st.

The accompanying map will aid in identifying the constellation Leo, though, as has already been said, there is little

level with the top of the wooden box, so that there was plenty of room underneath for my pets to crawl into their hiding place, as is their custom.

This contrivance costs next to nothing, and their food consists merely of a small piece of wet sponge dusted over with caster sugar and laid on the top of the mosquito netting, which must be renewed from time to time. My interesting little pets lived ten months in their primitive dwelling place, and I spent many a pleasant half-hour watching them.

In the course of time my pets knew me so well that if I transferred the sponge to my hand they would come quite tamely and rest there and eat at their leisure.

As a rule you would find the butterflies generally in their roosting place, *i.e.*, the cardboard box, but on a very cold wintry day you can easily entice them out by bringing them into a warm room, with the light of a lamp as a substitute for the sun.

Novel Winter Pets.

I AM sure many young naturalists will like to know that some species of butterfly can be kept throughout the winter, and that they become quite tame during hibernation.

Last winter I procured about twenty of, that beautiful insect known as the "Peacock" butterfly, and hibernated them in a wooden

box 2 ft. long by 1 ft. broad and about 1 ft. deep and covered it over with mosquito netting. This was their playground. In one corner I placed upside down a small cardboard box on a

AMY B. GREENWOOD.

The Evolution of the Bee Hawk Moth.

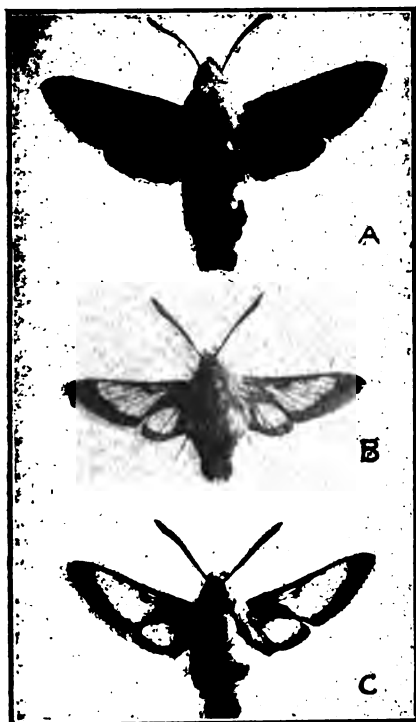
By FRED. W. G. PAYNE. Illustrated from Photographs by the Author.

READERS will remember that on page 33 of the third volume of THE COUNTRY-SIDE appeared an article which dealt with the remarkable likeness which many moths present to bees, wasps, and hornets.

That this resemblance is not a useless and casual one it is the purpose of the present article to show.

Viewing, as we now do, all living things from an evolutionary standpoint, the case of the Bee Hawk Moth should be placed well in the forefront of demonstrable instances.

It should be recollected that only life will



A. Humming Bird Hawk Moth.
B. Bee Hawk Moth, Scales Uncast.
C. Bee Hawk Moth, Scales Cast.

maintain animal life, hence the struggle for existence, and the consequent perpetuation of successful forms. Again, we must not forget that the insect we are considering is a moth, and is, of course, utterly defenceless, and we all know to what an extent moths constitute the sustenance of many stronger animals—especially birds.

Bees and hornets possess a great advantage over other insects, and we can hardly think that many birds would twice try conclusions with a well-armed humble bee, and, if a species of moth became in course of time, and gradually to closely resemble the humble bees, so much the better for the moths. The advantage would be such that the bee-like varieties would surely be more able to perpetuate their race than those less fortunate.

I think that, after perusal of what follows, and examination of the photographs, the reader will hardly doubt that such has actually happened in the case under consideration.

The Bee Hawk Moth has the same general characteristics as the Humming Bird Moth, but, when netted in flight, there is a space on all the four wings that is quite destitute of scales, and these clear spaces serve to accentuate the general likeness to a bee which the moth already possessed by its shape and body colouring.

I have this year bred from the chrysalis a few of the Bee Hawk Moths, and, by this means, have been able to partly bridge the gulf which is now fixed between these and the Humming Bird Moths.

When the moth marked "B" in the first illustration emerged from the chrysalis, and had dried its wings, the latter were far from clear in the central spaces, and had a very dusky appearance, looking as though covered with black chifon, this being caused by a great number of scales still adhering to the clearer spaces. This insect I was able to set and photograph without disturbance of the scales.

The other insect, "C," on emergence was covered with scales like the former, and I allowed it to stand upon my finger, and, from the excitement thereby caused, in a few moments it began to quiver its wings. Then a remarkable thing happened. From the wings was thrown off a cloud of dust, which was formed entirely of the scales set loosely upon the centre of the wings, and, in a few seconds, the wings themselves were clear and transparent (with the exception of the portion forming the borders and the wing rays, which remained densely scaled), and in this condition it is photographed.

Now the presence of these loosely attached scales points to the certainty of these moths (perhaps ages ago) having the whole of the wings as densely covered with scales as the Humming Bird Moth now has (c.f. Fig. "A"), and that the gradual thinning of the scales has accentuated the resemblance to a bee borne by the general appearance of the moth.

In this manner does nature give the clue to her past history—the mysterious law of heredity still produces the scales, weakened in adhesion, and lessened in number, only to be cast off in the first moments of flight.

I would draw special attention to the photographs showing the wings magnified (necessarily illuminated by a light from the rear).

No. 1 is of the left upper wing of the actual moth "B." This one, it will be remembered, I prevented from casting its scales, the uncast scales being plainly visible in the central area.

Photograph No. 2 is of the left upper wing of the moth "C." This, it will be seen, is almost destitute of scales in the centre. This is, of course, the moth which cast its scales while standing upon my finger.

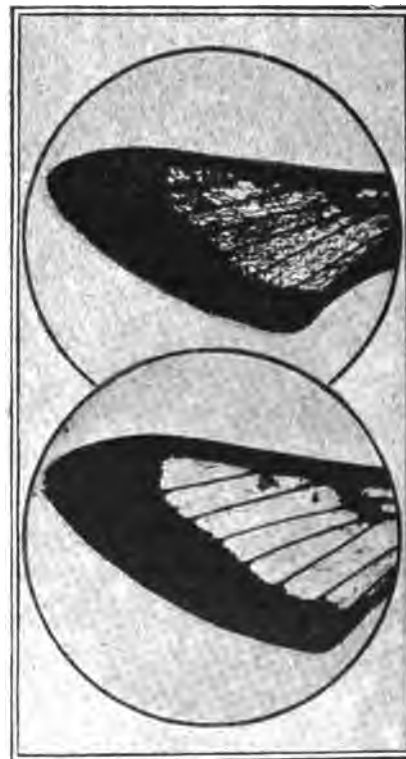
As to the reason why the portion, the size of a bee's wing, should have been cleared, and the remainder not, I am inclined to think that the clearing has made the wings glitter in the sun to the required

size (it is a daylight flier), and a larger area would have exposed the deception.

If this case stood alone it would be sufficiently remarkable, but, taken together with the deceit of the other clearwing moths, its meaning is obvious; natural selection acting in this direction has aided these moths to make their place in life more secure than it would otherwise have been.

If readers of THE COUNTRY-SIDE who may breed any of the other clearwings would note the scale casting in those cases and communicate their observations, they would be conferring a benefit upon other naturalists.

In reference to these superficial resemblances of one animal for another, it may perhaps help to dispel doubt in the reader's mind as to the extent to which such a likeness is able to deceive, if I quote the experience of one of the most accomplished naturalists, Mr. Henry Walter Bates, who spent many years collecting insects and birds in the great forests of Equatorial America. He relates that he several times shot Humming Bird Hawk Moths in the forests in mistake for humming birds. (Of course, these moths would not be the same species as the English one here figured,



Wings of the Bee Hawk Moth Magnified.

The top photograph is the wing of the moth B in the other illustration, whilst the lower wing is that of the moth C.

but very like it.) Now if a highly intellectual human being, with all his senses alert for a fixed purpose, could be so deceived, we can no longer deny the efficacy of such deceptions when practiced upon a lower intelligence.

The Story of the Fern.

Some account of the wonderful arrangement by which Ferns are propagated.

IN all the wide world of nature there is no more fascinating tale than the life history of the fern. There is such an air of mystery surrounding the origin and development of this graceful inhabitant of the moist dells and shady nooks of the country-side, that one can well understand the rustic folk of some hundreds of years ago attributing the appearance of the fern to the agency of the fairies. The light which modern science has thrown upon the subject has been sufficient to dispel completely this pretty fancy.

The most puzzling feature in connection with fern life to the old naturalists, was the fact that these plants arose from strange green patches which apparently grew spontaneously out of the ground. Closely as these early observers might watch the surface of the soil in proximity to mature

2), were composed of a number of little cases, to which has been given the name sporangia. These sporangia, shown in Figs. 4 and 5, were seen at a certain stage in their development to burst, and in so doing distribute a vast number of infinitely small organisms. A wonderful diversity of form in different species was exhibited by these little bodies, and many of them were beautifully scored patterns.

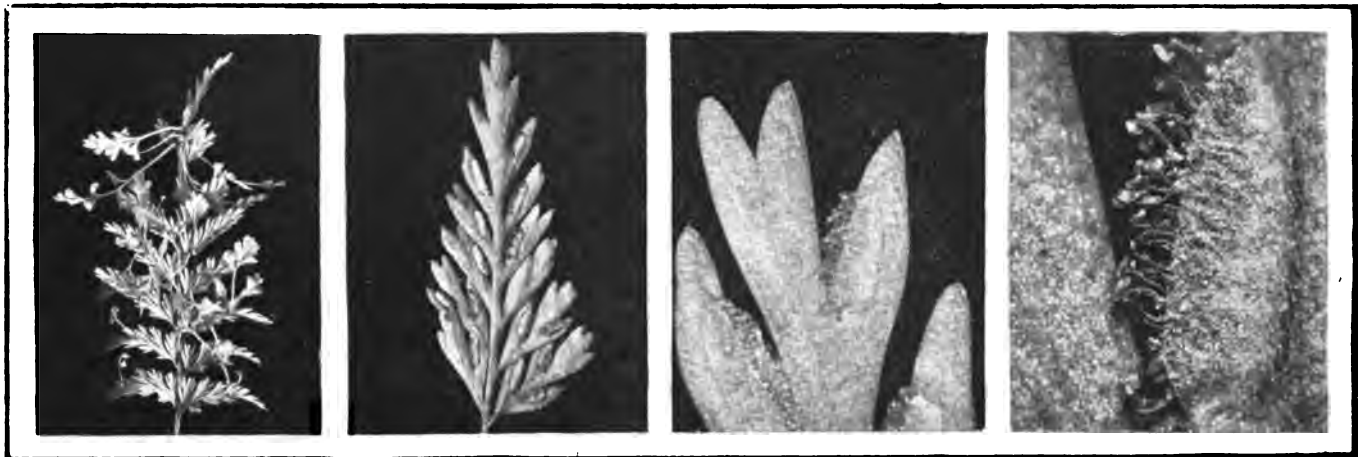
And then it dawned upon the observer that it is in tiny objects such as these that every kind of fern, from the noble Dicksonias or Tree Ferns, to the most humble of our native species, has its origin.

These grains of dust, or spores, as they are called, must not be regarded in the light of seed, to which they bear small resemblance. In the seed of a plant we have little more than an exact replica of the

scope, it will be seen that the surface is fairly liberally covered with distinct cells of a different type from the spores.

These cells are of two kinds, and have been called the embryo and the sperm cells. In the former is contained the embryo of a minute frond bud, although it will scarcely be recognised as such. In the latter cells are produced strange little bodies, which resemble nothing so much as minute pieces of thread. These are immensely active, and throughout the whole course of their career exhibit their character in a most lively manner.

The development of the contents of these two cells proceeds apace, until a stage is reached when the thread-like bodies from the sperm cell move out from their shelter. Coming into contact with the embryo bud, fertilization takes place, and the birth of the fern is an assured thing. Recent investigation has led to the belief that in each patch of prothallus only one embryo is fertilised.



[Photos]

Some Ferns can increase by leaf budding. This is a leaf of *Davallia* epiphylla bearing young plants.

Back of part of a fern leaf (*Davallia* epiphylla) showing sori or groups of spore cases.

Here is a portion of *Davallia* leaf which has been magnified to show the soci.

Much magnified sorus of *Davallia* epiphylla showing plainly the sporangia.

[F. H. Crabtree]

A unique series of Photographs illustrating the Story of the Fern.

fern plants, they could detect nothing which was analogous to the seed from which other plants were developed.

At the time when Gerarde wrote his Herbal, the matter seems to have been a point of much controversy. Speaking of a variety of the male fern, he says: "Neere the old plants I have observed vere many small young plants growing which came by the falling of the seed from those dusty scales; for I believe all herbs have seed in themselves to produce their kinds." As if to clinch the argument he concludes his remarks with a reference to the Scriptures, Gen. i., 11 and 12.

Some early botanical writers were bold enough to declare that ferns had no seed, in which they unwittingly got very near to the truth of the matter, although they were quite at a loss to explain how the increase of these plants was carried on.

And so the fierce argument went on without the least elucidation of the mystery, until the advent of the high-power microscope made it possible to examine with accuracy the strange brown patches which were always to be found on the backs of a large number of fern fronds.

The microscope discovered the fact that these patches, now known as sori (see Fig.

species in miniature, packed up, as it were, in a little parcel, together with a supply of nutriment for the use of the plantlet. But the spore of the fern is a mere cell—a tiny spot of life in one of its simplest forms.

In a dry state the fern spores remain quite inactive, but once let a number of them fall into a favourable position and a remarkable change takes place. Every one of the cells is capable of division into other cells, and this process of extension proceeds very rapidly until the conjunction of a large number of these organisms together forms a green film on the surface of the earth.

This curious substance, which has been called the prothallus, is possessed of a quantity of fine rootlets, enabling it to obtain a foothold in almost any situation. The prothallus is of a refreshing green colour, and a number of these lowly forms of plant life present a most pleasant appearance.

But the prothallus does not exist for itself; it is only the half-way house, so to speak, in the history of the development of the fern. If, when the prothallus is thoroughly established a small portion of the underside be examined with a micro-

scope, it will be seen that the surface is fairly liberally covered with distinct cells of a different type from the spores. These cells are of two kinds, and have been called the embryo and the sperm cells. In the former is contained the embryo of a minute frond bud, although it will scarcely be recognised as such. In the latter cells are produced strange little bodies, which resemble nothing so much as minute pieces of thread. These are immensely active, and throughout the whole course of their career exhibit their character in a most lively manner.

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From the underside of the small frond bud very tiny rootlets begin to find their way into the soil, and soon after a root stock is formed, and finally up comes the stem, and the baby fern is born. From thenceforward, as with other plants, the story is one of growth and increase, until the fern plant arrives at maturity, when it in turn is able to produce spores for the propagation of its species. A few varieties of fern are possessed of leaf budding powers, and can produce young plants on their fronds. See Fig 1.

S. L. B.

Profitable Poultry Culture.

THE HAMBURG.

By "CHANTICLEER."

A Popular Breed.

LOVERS of poultry cannot fail to admire one of our most beautiful varieties of pure-bred fowls known as the Hamburgs, which have enjoyed a popularity of many years, especially in the Northern counties, where they have always been great favourites.

There are several varieties of this very beautiful breed of poultry, including the gold and silver spangled, black, also the gold and silver pencilled, all of which demand attention as attractive fowls, which are as useful as they are pretty.

An appreciable feature of the Hamburg is its smart and lively appearance, which seems to keep it invariably in the pink of condition, with a consequent supply of eggs, for Hamburgs are very prolific, rewarding their owners with fully 240 to 260 eggs per annum, although it must be admitted that the eggs are of somewhat small size, the black variety laying the largest.

When given their liberty Hamburgs will forage for themselves, and collect almost sufficient food from pasture land, being exceptionally small eaters, whilst it should be added that they are not so well suited to confinement as many other of the small breeds.

Hamburgs are generally non-sitters, and the chickens grow rapidly after the first few weeks, when they require a little extra attention.

True to Type.

Of all fancy poultry, I know of no breed that has for so many years kept so true to type as the Hamburg, which seems yearly to grow more and more comely, notwithstanding the persistent efforts of poultry fanciers to produce the perfect bird for the show pen.

The poultry keeper can safely make a start with every chance of success if he pays a decent (not excessive) price for a pen of birds; in fact, the young beginner with good stock can breed quite as well as the old hand if he pays attention to the various points of excellence.

At Poultry Shows.

Almost every poultry show provides special classes for Hamburgs, and here, I will state, they form the prettiest section of the show arena, and are much admired.

Whether we look at their handsome comb, so beautifully worked, and finishing with a lovely pointer (an important feature), their round, shapely, good quality

white lobes, full and beautifully marked hackle, round and stylish bodies, with large, graceful tail, and fine slatey blue legs, they are always objects of admiration, even to the uninitiated.

Not many years since trimming or manipulation of the Hamburg's comb was largely practised amongst Yorkshire exhibitors, but, thanks to the efforts of the Poultry Club, these objectionable practices have been put a stop to.

The Silver Spangled.

The illustration which accompanies these notes does full justice to the beauty of the spangled varieties of Hamburgs, of which, whilst admitting the claims of

Then the tail is very important. It should be full and flowing in the cock, and neat and stylish in the hen. At the end of each tail feather a big, bold, round spangle should be conspicuous, which should form a line all along the edge of the tail.

The Gold Spangled.

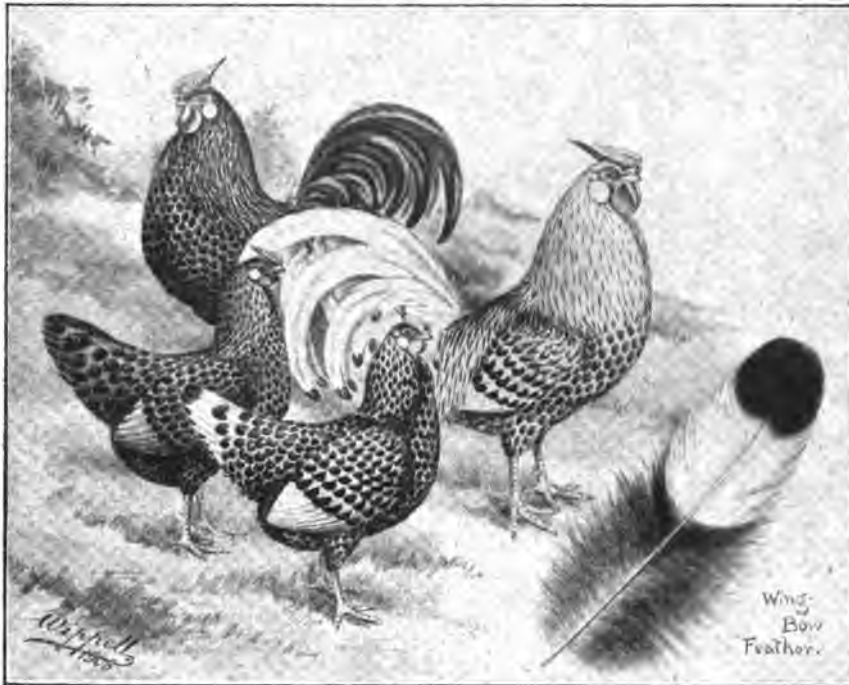
The Gold Spangled Hamburgs enjoy advantages over the silver, inasmuch as they have a plumage which does not show the dirt or get their feathers soiled, whilst when wanted for exhibition it does not require washing, although it certainly improves them.

The correct shade of colour of golden is a very rich mahogany; especially for breeding is this important, as the bay shade seldom lasts, and the progeny lack colour sadly and appears washy. Whether cocks or hens, the lustrous moons or spangles should be of a brilliant metallic green, which gives an appearance of being raised on the body colour.

It should be mentioned that to obtain specimens approaching the standard of perfection many have to be bred, and I would add that while the percentage from even good birds is small, from inferior or mediocre stock it is nil. When consigned to the killing or fattening pens, although hardly the desideratum of table birds, they are plump, cobby little specimens, and not to be despised.

Those of my readers on the lookout for a handsome, beautifully marked breed of poultry, which will always look a credit to their owners, and reward them with a good supply of eggs, winter and summer, will

not regret giving attention to Hamburgs, which have stood the test of many years as a profitable fowl.



Gold and Silver Spangled Hamburgs.

These birds are very prolific, laying from 240 to 260 eggs per annum.

both, I give preference to the silver spangled, and will briefly deal with this attractive fowl, whose evenly spangled plumage is a work of art.

The colour is pure black and white; that is, the spangles or moons, which must be round as possible, and not pear-shaped, are greenish black on a lovely silvery white ground, as pure as possible, the effect of which is very striking.

The hackle feathers in the male bird must be sharp and well ticked (not splashed) and flow well over the back and shoulders, whilst the breast must be evenly spangled right up to the throat, and be perfectly free from laced edgings. The spangling should extend right away down to the thighs.

The shoulders must not show mossiness, but be quite clear, whilst the wings themselves must be pure white, with good distinct bars, as large as possible. Many otherwise good birds often fail in this particular point.

"Every Boy's Book of British Natural History," by Percival Westell, F.R.H.S., M.B.O.U., published by the Religious Tract Society at 3s. 6d., is doubtless assured of a large sale. The 109 illustrations from photographs by the Rev. S. N. Sedgwick are worth the money by themselves; and there is a great deal of useful information under the various heads of natural history contributed by Mr. Westell. The picture on the cover, of an English grass snake, is coloured with unfortunate brilliancy; and there is not always close agreement between the illustrations and the letterpress. Nevertheless the book is cheap and will prove a popular gift book for the young. Incidentally we are glad to know that Mr. Percival Westell was personally acquainted with the famous tortoise which the servant used to break coals upon all through the winter. We had supposed the creature only existed in the pages of *Punch*. And the coals must have been very soft.

A Mixed Bag.

Weasels Hunting.—Weasels frequently hunt in packs, as many as eight having been seen together.

Grass on Bowling Greens.—The grass used on bowling greens is chiefly drawn from rabbit warrens.

The Mole.—Moles breed freer in the woods than in the fields as the soil is softer and less liable to be disturbed.

Youngsters' Long Flight.—On the day after leaving the nest, young missel thrushes can fly over a hundred yards.—R. E. VAUGHAN-ROBERTS.

Salt Water Lovers.—The young of the sheld-duck appear to be able to smell salt water the moment they are hatched and will toddle for miles to gain it.

Ears Riddled with Shot.—A hare or rabbit is frequently seen with old shot holes through the ears; these, of course, did the animal no permanent harm.

A Noisy Crab.—The red ocylope crab has been heard to make a noise resembling that of an angry squirrel when another of his species has intruded into his burrows.

Where Plants get out of their Depth.—Mr. Alcock, in "A Naturalist in Indian Seas," states that no plant life is to be found in the ocean at the depth of 200 fathoms.

Habits of Flowers.—Like animals and birds, plants have their favourite haunts. Primroses and violets prefer a bank to a field, and wall-flowers a wall or rockery to the garden.

Power of the Human Nose.—It has been stated that the human nose is capable of detecting the presence of 1-2,760,000,000 of a grain of mercaptan, a substance having a very bad smell.

Cannibal Kestrels.—Once when four captive kestrels, three females and a male, were left for a few hours without food, the three ladies set upon and devoured the gentleman of the party.

The Red-legged Partridge.—When a covey of red-legged partridges observe a person enter a field, they at once commence to creep away, and when sufficiently far they rise, not in a body, but singly or in two's or three's.

An Expert Orchestra.—It is the habit of the snowy tree cricket of America to indulge in regular concerts. They keep such perfect time that it almost seems as if they were conducted by the baton of a Damrosch or a Thomas.

Plovers' Eggs.—Some men who collect plovers' eggs for the market, go to work in a scientific manner. They first of all place a stick in the ground, then walk around it in an ever enlarging circle, thus covering every foot of ground.

Habits of Pheasants.—It is the habit of the common "English" pheasant, when wandering, to follow the course of the valleys and so gradually descend to lower ground; the Reeve's pheasant, on the other hand, invariably makes for the highest point of land in the neighbourhood.

The Rabbit's Blind Outlook.—"It is observable," says Richard Jefferies, "that before the rabbit ventures forth he stays and listens just within the entrance of his burrow, where he cannot see any danger unless absolutely straight before him—a habit which may have unconsciously grown up from the apparent resonance of sound there.

Birds as Pets in China.—Lady Brassey says, "In the bird market I saw numbers of little birds for sale, for the Chinese are very fond of pets, and often take their birds out in a cage with them when they go for a walk just as we should be accompanied by a dog. They manage to tame them thoroughly, and when they meet a friend they put the cage down and let the bird out and give him something to eat while they have a chat."

The Sycamore.—The sycamore tree, frequently mentioned in the Bible, was a species of fig-tree, while ours is a kind of maple.

Badger and Honey.—The badger does not dig up wasps' nests for the honey, but for the white larvae they contain.

Pheasants as Insect Destroyers.—It has been noticed that, where, one year, pheasants have been reared, the next there is an absolute dearth of insects.

Acorns and Pheasants.—Numbers of pheasants are killed every autumn by poachers, for the ripe acorns are a great attraction, and the birds wander great distances to find them.

A Highland Superstition.—The shaking of the leaves of the aspen poplar is attributed by the Highlanders to the fact that the cross of the Saviour was made of this wood.

Rime Frost and the Poacher.—Rime frost is hated by the poacher, as when the sun rises it burns black his footshape and thus shows where he has been overnight.

A Stoat's Store-Room.—The late Mr. C. J. Cornish once missed twenty-two partridges' eggs, but found them all in a mole's run which had been utilised by a stoat as a store-room.

Useless Organs.—Many species of lobster-like crustaceans are, although totally devoid of eyes, supplied with eye-stalks, most of which are, however, of the most rudimentary description.

A Strange Bird's Strange Habit.—In "The Gamekeeper at Home" Richard Jefferies says that the nightjar prefers to roost during the day on a leafless branch rather than on a leafy one.

A Kind Retaliation.—Because a lesser black-backed gull ate her eggs, an eider duck retaliated, says Kearton, by taking possession of her unkind neighbour's nest and undergoing the work of hatching for her.

The "Mule-Killer."—The praying mantis is called, in South America, the "mule-killer," because the natives think that the brown fluid which it ejects out of its mouth is fatal to mules.

Deep and Shallow Lives.—The tissues of some crustacea which live at a depth of the ocean where the pressure amounts to three tons to the square inch, are not less delicate than those of some of the shore-frequenting species.

Strange Nesting Places.—An enterprising bird built its nest behind the dial of the public clock at St. Mary's Church, Lwton (Lancashire). Despite the tolling of the hours and other disturbances a brood was successfully hatched.

Protected Breasts.—Sportsmen say that a bird driven straight on to them can be shot at extraordinarily short ranges without being spoiled; probably because the feathers in front are like a thick shield which would deflect the shot and the bird therefore would not be mangled.

Voracious Hordes.—Mr. Alcock in "A Naturalist in Indian Seas" speaks of the immense number of sharks off the Cocos Islands. He says, "All the big sea-perches that we caught on our fishing lines were bitten short off at the head before we could haul them in."

The Sea-urchin's Larder.—On breaking a piece of coral, Mr. Alcock once discovered a species of sea-urchin at the bottom of its burrow resting upon and devouring a small hoard of boiled rice which must have fallen from a passing ship.

Deep-sea Partnerships.—Many queer partnerships are formed in the depths of the ocean, as, for instance, whenever a certain species of shell-fish, *Pleurotoma symbiotes*, was taken it was always covered with the same species of anemones, *Episoanthus*, the partnership evidently being of mutual benefit to both parties.

Under the Seat.—The organist at the Ripley Hospital, Lancaster, discovered a robin's nest under his organ seat. It contained five eggs.

An Ocean Wanderer.—An American butterfly, the monarch, an extremely powerful flier, has been seen five hundred miles from the nearest land.

The Coltsfoot.—The leaf of the coltsfoot used to be dried and smoked by the lower classes of country people, but is now rarely used as tobacco is so cheap.

The "Spare" Hawk.—In many country districts the sparrow-hawk is known as the "spare" hawk. It is not, however, spared on that account.

Degeneration of Rabbits.—One often hears it said that English rabbits are degenerating in size and that the introduction of Continental varieties would be beneficial.

A Fine Spectacle.—A fight between two old cock Reeves's pheasants is well worth seeing. They spring up to a height of six feet and strike each other in mid-air.

Unnoticed "Artists."—The swallow and the pied wagtail are two birds who, although possessing quite pleasing voices, are not often spoken of as songsters.

Self-Amputation.—When injured or alarmed, the cray-fish will frequently throw off one or more of its limbs. From the stump, however, a new limb will in time grow.

Field-mouse and Wild Arum.—The long-tailed field-mouse is said to have been observed to climb the stem of a flowering wild arum and bite off the appendix above the ovaries, afterwards making off with its prize.

The Cockroach as a "Gift."—The cockroach is said to devour bed-bugs and are requested as a favour from sailors by native tribes, who are greatly troubled by the parasites.

Frost and the "Farmer's Friend."—Though rooks are extremely hardy birds, a long continued frost kills them in numbers; they fall, frozen to death, from their perches during the night.

Fox and Osler Beds.—During the day foxes prefer to sleep in the osler beds near running water and will turn round and round till they have trampled down the grass into the form of a bed.

Sparrow-hawk as Bird-scarer.—The late Mr. E. Newman stated that the sparrow-hawk if unmolested will earn the wages of at least three boys by scaring the sparrows from the growing corn.

"Too Many Cooks."—The male of a pair of avadavats having also courted a female orange-breasted waxbill, the result was a nestful of eggs, in which he and his two mates took great interest, failing, however, to hatch them.

Helpless Blackcock.—In July and August the male blackcocks lose their ornamental tails and wing feathers and are hardly able to fly. At this season also they gain a protective plumage on the head and neck, like the grey-hen.

A Warning Light.—A certain large spider-crab which lives at the depth of about 900 fathoms emits a greenish-blue radiance. As the creature is totally blind it has been suggested that this luminosity is to scare away enemies. On the other hand, its use may be to attract its prey within reach.

A Rear Protector.—The Viceroy caterpillar of America has a very ingenious way of escaping the attacks of enemies, for when he is feeding out on a slender twig of his food plant he fastens a largish bundle of rubbish behind him to prevent being surprised by an enemy in the rear.

My Pets.

Written and Illustrated by George Rankin.

HAVING lived for the most part a lonely life, much of the affection and consideration usually given to friends and relatives has been bestowed by me upon the pets, birds, and animals which I have possessed almost from my earliest recollection. I have kept at one time or another most of the pets common to boyhood, such as pigeons, rabbits, song birds, etc., but I have also numbered amongst my friends several animals not usually kept in captivity. One of these was a brown hare, which I caught when it was quite young, and in course of time it became so very tame that though often allowed its liberty it never showed any desire to join its wilder brethren. It lived for several years, and died a natural death.

Another rather uncommon pet was a squirrel also caught when quite young, and the manner of its capture was rather interesting. It must have fallen out of a nest, or been ejected by the rest of the family, as it was much too young and inexperienced to be abroad without its parents' guidance.

It crawled up the skirt of one of my sisters as we were being taken for our daily walk through the woods, which in that district abounded with these merry little fellows. It was brought home and handed over to me, as such things usually were, and I fed it by hand until able to feed itself. It became very tame, and when full grown I made a large cage for it, with the trunk of a young tree up the middle, up and down which it never seemed to tire of running.

It had many funny and most interesting ways, and was as careful as any cat to keep its little brown coat clean and in good order. When finished eating anything, such as a nut or cone, which it held in its paws in a very human manner, it reached round for its bushy tail, and with it carefully wiped its mouth and paws.

I often took it out of its cage for a game. It particularly seemed to enjoy being rolled over and over, though this was better fun for it than for me; its claws

and teeth were very sharp, and it used them freely in the course of the game. He lived for six or seven years, finally falling a victim to a large rat, which somehow was able to get at him through the wire of his cage.

Other rather unusual pets were sheep, not lambs, but full-grown sheep. Amongst them the two most notable were an entirely black one of English breed, "Topsy,"

much occupied in the schoolroom to give these pets the attention they required, they were transferred to a field some distance away to end their days in peace, but though mixing with others of their kind they never forgot their former playmates, and the sight of the dogcart passing by their field, or the call by name never failed to bring them running from the remotest corner of their pasture to receive a caress or a handful of corn or oil cake. When we left them they followed as far as the fence would permit, and their bleating could be heard long after we were out of sight.

Pigeons I kept by the score, fantails, tumblers, pouters, etc. Two of the latter I had given me when they were quite old birds, and had always been used to their liberty, yet within a very short time I had them so tamed that they followed me about everywhere I went, up and downstairs, and all over the house.

"Marcus," a beautiful bird, chestnut and white, was specially attached to me, and never willingly let me out of his sight. Pigeons of the rarer kind I usually kept in a wire enclosure about the size of a small room, having a wooden house in the corner for nesting, roosting, etc.

Amongst them I kept a tame jackdaw, who never tired of playing all sorts of practical jokes on the inmates, especially the fantails, whose proud carriage and spreading tails afforded him many opportunities of amusing himself at their expense. One of his favourite tricks was to come up behind them, concealed by the spread of their tails, and give their feathers a violent tug, making off before they had time to turn round to see the offender.

The wooden house mentioned had a door which I closed at night for warmth. I frequently found it open in the mornings, and for some time could not account for it, until suspicion fell on "Jack," who always roosted among the pigeons. At length I caught him in the act, and found that he opened and shut the door with the greatest ease, and nothing seemed to delight him more than to shut some of the pigeons in or out, as the fancy happened to take him.



My Pet Squirrel.

He was as careful as any cat to keep his little brown coat clean.

and a black-faced Scotch mountain ewe, "Emily." They were kept in houses specially made for them in the stable yard.

When we went out to walk the sheep were released, just as dogs might be, and they followed at our heels in just the same manner, without a leading string of any kind, occasionally taking a scamper on in front, and jumping along with all four feet stiffly planted, as is the manner of sheep and deer.

When we children became too big or too

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (see third page of cover), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Dragon-Flies in Autumn.—No, it is not unusual for dragon-flies to mate in October.—(to E. BROWN, Oswestry.)

Plants Identified.—The pretty flower like a white single dahlia with gold tuft in the centre is probably the white Japanese anemone, *A. Japonica*, var. *alba*.—(to J. M. GILFILLAN.) Not a wild plant, but a globe thistle, *Echinops*, escaped from cultivation.—(to F. PRICE, Torquay.)

Sight of Dragon-Flies.—The reason why the dragon-fly, in spite of its wonderful eyes, is so easily caught when resting is that its eyes, with their thousands of facets, only register distinctly the changes of light caused by the movement of other bodies. A passing fly is distinctly seen—and usually caught—but the careful advance of a human being with a net seems more like a general and gradual clouding in the sky.—(to M. FOSBERRY.)

Wood-boring Shell-Fish.—The sea shell-fish which had bored a tunnel nearly through a log of wood was a pidcock, *Pholas dactylus*. Although its shell is thin and flimsy, the rough surface acts like a file upon either wood or stone, into which the creature gradually bores its way by a perpetual screwing movement.—(to R. DAVIS, Christchurch, Hants.)

Noise of Death's Head Moth.—Yes, both the caterpillar and the chrysalis of the death's head moth can make noises; but I do not think that this fact disproves the statement that the perfect insect makes its squeaking sound by rasping the wing rays of the upper and under wings together. The noise made by the caterpillar is a "click"; and the chrysalis, I think, can only squeak just before the moth emerges, when the wings may be sufficiently developed for the purpose.—(to H. MURPHY, Leeds.)

"Queen" Wasps.—The communities of wasps are not like those of bees with only one female, the queen, and a number of drones or useless males, who are expelled. In the wasps' nests there are numbers of females to lay the eggs, and the males do useful work. The reason why "queen" or female wasps become a nuisance in houses in autumn is that the activity of the nest is over and they are seeking hiding-places for the winter. In the spring each female wasp which survives will issue forth and build the beginning of a new wasps' nest.—(to Mrs. R. L. HAYGATE, The Wells, Bromyard.)

Swarming Ants.—No, the flying ants which appear every year on the top of the same hill in great multitudes are not migrating, but are the natural produce of nests on the spot. It is possible that the building on the top of the hill provides the ants with exceptionally good shelter for their underground nests and that the flying ants consequently swarm in exceptional numbers.—(to H. B. TURNER, Ulverston.)

Waterweeds.—The small floating weed which covers the pond with a green film is the common duckweed. Waterfowl will keep it under.—(to J. H. BRIGGS.)

The Heron in Norfolk.—"Answer," as ordinarily pronounced, almost exactly reproduces the name given to the heron by Norfolk

rustics, although no doubt "arnser" would be the right way to spell their corruption of "hernshaw." This was the old name for heron, whence we have Shakespeare's phrase to "know a hawk from a handsaw," i.e., "hernshaw."—(to J. F. RESTREUX.)

"Silver Fish."—The little silvery insect which goes by this name is the fish scale, *Lepisma saccharina*. It does not turn into a moth. Indeed it goes through no change whatever. Larger and more destructive species occur in other parts of the world, and it is quite possible that these might be introduced with horns and other specimens.—(to Miss A. S. CHRISTOPHER.)

Swallow Roosts.—Swallows select osier-beds as roosting-places when they have assembled in large numbers on migration, because nowhere else would their close-packed ranks be safe from ground-vermin at night. Starlings select reed beds and osier-beds for the same reason. In both cases, however, the birds are actuated by inherited instinct, not by individual calculation of their risks.—(to J. KIBBLE, Charlbury, Oxford.)

Oak in Second Leaf.—The reason why only one oak in the row bore a second crop of leaves on new strong shoots was that it had not, like all the others, exhausted its energy in producing an abundance of acorns. What the cause of this infertility may have been, however, I cannot tell; but luxuriant vitality and paucity of seed generally go together. Was there a manure heap close to this particular tree last year? If so, this would account for its infertility and luxuriant growth.—(to W. EARNSHAW, Hall Green.)

Sparrows at Lighted Windows.—Yes, sparrows will often fly against lighted windows when they have been frightened from their roosting-places by the brown owl. This is the owl that hoots and lives chiefly upon small birds. I would not say, however, that the sparrows "instinctively fly to the lighted windows for protection"; because I have found that if you frighten sparrows that are roosting in a verandah by banging upon a lighted window they still fly to it. Evidently they are dazzled by the light and cannot even help flying towards the noise which scares them.—(to V. M. HOOD, Rosewell, Midlothian.)

Crossing Flowers.—It is easy to cross flowers of different colours, provided that they are of the same kind; but it would be useless to attempt to get a blue chrysanthemum by crossing a white chrysanthemum with a blue flower of a different kind. Chrysanthemums are grown from cuttings. You can, of course, grow wild roses in pots from seed; but you would get flowers sooner from cuttings on rooted wild briars.—(to H. REES.)

Root Through Stone.—Roots growing through holes in stones, metal rings, bones, bottle-necks, etc., as well as through other vegetable substances, such as tulip bulbs and potato tubers, have been described and illustrated in THE COUNTRY-SIDE. Twitch or couch grass especially will grow through anything which lies in its way. The explanation is that the growing point of a rootlet in stem is pushed on by the multiplication of the cells behind it; and when it has got into a hole or crack it must go on until, if possible, it comes out at the other side.—(to G. W. SKETT, North Elmham.)

Gulls in a Storm.—Almost all birds face the wind, especially gulls, plovers, and other birds which feed in the open. If they turn their backs to the storm for a moment, not only are their feathers roughed the wrong way, but they are very liable to be "tipped up" by the wind getting under them from behind. In a blizzard it is very interesting to see the flocks of peewits standing like regiments of soldiers in ranks, each rigidly facing the wind.—(to F. BOLLAND, The Ivie, Chester.)

Mealy Bug in a Greenhouse.—This is the worst of troubles. You must turn out all the plants, sponge them carefully with a strong insecticide, and change the top layer of soil in their pots. Then you must thoroughly wash the empty house inside and out with soap, water, and paraffin, afterwards fumigating it with sulphur. Carefully examine all the plants as you put them back, brushing every spot where mealy bug appears with methylated spirit. Examine the plants weekly for six weeks.—(to L. ROBINSON, Monton Holmes, Eccles.)

Aviary and Inmates.—Yes, your query does ask too much of us, simply because we believe your desire to be extremely impracticable, if not impossible. The method of keeping animals and birds confined together succeeds better in theory than in practice, so much so that we cannot take the responsibility of recommending any animals that would do to keep among birds in an aviary. Better confine yourself either to birds or animals. As regards design and building of aviary, we think you cannot, under the circumstances, do better than purchase one of the ready-made structures built by horticultural builders. Send for catalogue from such of our advertisers. The space you mention would hold an aviary to accommodate about fifty birds the size of a canary, not more. The height counts for very little; floor space is everything.—(to JAMES HARRISON, Tulse Hill.)

Moulting Canary.—Your canary that is continually moulting and pecking at its feathers is evidently in a very low condition. You should examine its cage at night for traces of red mite. Feed as you are now doing, but give in addition a small piece of bread dipped in milk and sprinkled with moist sugar twice a week. Give as much Epsom salts as will lie on a sixpence and ten drops of lemon juice in its drinking water for two days, and afterwards give by the same means fifteen drops of byno-phosphate (Allen and Hanbury's) every alternate day for a fortnight, after which decrease the dose to ten drops and give every third day until the feathers cease to fall. See that the bird does not hang high up near the ceiling, nor in the draught of a door or window.—(to Miss GRACE BAKER, Hastings.)

"A Book of English Gardens," by M. R. Gloag (published by Messrs. Methuen at 10s. 6d. net) is a delightful book for those who love the fragrant memories of old-world gardens. It is not a horticultural work; but is rather a delicate *pot-pourri* compounded of Horace Walpole, Evelyn Pope, and a great deal of Miss Gloag's artistic and literary knowledge of many of the finest gardens and estates in England. The book is beautifully illustrated, too, by Miss Katharine Montague Wyatt, the frontispiece being the Dutch garden at Holland House, belonging to the Countess of Ilchester. It is to the Countess of Ilchester, too, that the book is dedicated—but, curiously enough, not by Miss Gloag, who has written it, but by Miss Wyatt, who has illustrated it. That, however, is no business of the reader, who should make a point of getting the book from the library. It will provide a day of very pleasant reading.

Recipe for Christmas Pudding.—Lady readers may like to have the following recipe for their Christmas plum pudding. Take three-quarters of a pound of flour, two ounces of Borwick's baking powder, two ounces of breadcrumbs, one and a half pounds of suet, two pounds of raisins, one pound of currants, ten ounces of sugar, two ounces of almonds, one pound of mixed candied peel, salt and spice to taste. Mix the ingredients well together and add six eggs, well beaten, and three-quarters of a pint of milk; divide in two and boil eight hours.

Some Dogs of the Day.

By Mrs. STANNARD ROBINSON.

ONCE a year the great hall of the Crystal Palace resounds with the barking of dogs, when the Kennel Club holds its triumphant reception of the champion dogs of England, and to the fancier this is the day of days in all the year.

This year fashion seems to lie with no

will continue up to the standard of the past few years.

I have known a couple of thousand pounds given for a team of collies; a thousand for a bulldog. In toy-dog land the price of two hundred guineas has been quite a common average, and dogs under the value of £100 despised even by those of moderate incomes.

But now, these fancy prices are the monopoly of a few kennels, which have, by continuous and persistent showing made their name.

Among the exhibits of Her Majesty, who

tress, but in the same way that time waits for no man, so the years closed in on "Plumpy," and the time came when his Royal owner felt that less bustle and more ease was the best life for her Chow, and so, when the Royal lady had to journey "Plumpy" was left in the care of the head kennelman.

At these times "Plumpy" went to the kennels quite happily, and though he enjoyed perfect freedom, and a short run would have taken him to the great house, he never went at any time until the precise day and hour of the Royal return. Curiously enough, then, just before her arrival he would be found sitting on the doorstep of the main entrance.

From the position of Sandringham House it is clear that he could not hear at the kennels the bustle that heralded the Royal home-coming, and as the latter made no difference in its daily routine there could be nothing that would suggest the event to "Plumpy." But the fact remains



Photo.]

[Thos. F. Hill.

Queen Victoria's Tibetan Mastiff "Bout."

A particularly fine specimen that beats present day dogs.

particular variety, but there are some breeds which may be termed smarter and others that are higher priced than the majority.

The many foreign varieties, such as the Slughis or Afghan, Greyhound, The Pekinese, Tibetans, Samoyedes, Japanese, and Chows, are universally esteemed by ladies. The quarantine laws have made them rare to English buyers, and, therefore, more desirable in quarters where the dog is valued only in proportion to the distinction it confers on its owner.

At the Kennel Club Show a week or two ago the breeds and sub-divisions of some

was also a prize-winner; was her Chow, "Sandringham Loo Choo," and looking at this dainty Celestial she reminded me of "Plumpy," the favourite of the Queen's earliest days at Sandringham. I thought, too, of the wonderful telepathy

which existed between "Plumpy" and the Princess, as our Queen was then.

For many years "Plumpy" had travelled everywhere with her devoted mis-



Photo.]

[L. Lowe.

A White Samoyede.

on record that whether the Princess was away seven days or seventy, "Plumpy" never went near the house until the hour his mistress came back, and then only in time to greet her, which he did with all the warmth and sincerity of canine nature.

One of the rare and unusual exhibits at the Kennel Club Show was that of a Tibetan mastiff, a specimen nothing like so handsome a beast as one owned by the late Queen in the fifties, and of which we are able to publish a portrait.

"Bout," that was his name, carried the coat of a Newfoundland — thick, pily, and blue-black, with a flag so thick that it could equally have



Photo.]

Black Labradors.

These fine animals belong to the Hon. Holland Hibbert.

64 breeds were all fully represented, and as a display of what man can accomplish in the making of a dog, no praise can be given that could in any way adequately mark our appreciation of the diligence and perseverance of the many movers in the dog world.

The exhibition was a record of excellence and general improvement, but we question whether the small fortunes that have been spent in dogs, and the high prices given,

made a brush like that of a fox. The face, with its bloodhound eyes, discloses a gentleness combined with ferocity that would have made him an admirable companion for the high road, or of a lonely house requiring protection from burglars.

The Palace Tibetan mastiff was equally full of character, but seems less massive in build than was the Windsor dog.

There was a good show of Elkhounds, the sporting comrade of man in Scandinavian forests, but Samoyedes made a poor display, and the sledge dogs that Nansen immortalized so reverently were not of the best. The lovely, bear-like, snowy coats were missing. Acclimatisation in a warmer temperature and richer feeding seems to be thinning the coat and altering its thick texture; anyway, the exhibits last week were not equal to those admired Polar dogs shown a couple or more years ago by the Queen, Mr. Kilburn Scott, and others.

The intelligence of the Samoyede dog is

and the dog holding it until the Arab sportsman reaches his game.

One of their many fascinating characteristics lies in the possession of claws fringed between the toes with silk-like hair, a provision of Nature which adapts them especially for galloping on the stretches of sand in their own country, but

which remark is, I suppose, the greatest compliment that can be offered the breed. Collies are losing alertness of expression, but have gained in brush, ruff, and texture of coat.

Borzoi are losing the Russian type and becoming less elegant, perhaps, though still very beautiful in outline and expression.

Our Scotch friends, the Dandie and Scottie, change very little, but the Skye is rapidly becoming a Yorkshire of a large size, and losing nothing of his uncertain temper.

Pomeranians hold their own with scant alteration, as also the Japanese and Pekinese, whose Eastern beauty and originality continues to mark them out for special admiration.

The snub-nose section—the pugs and Griffon Bruxellois—have reached the acme of type, and our failure in pugs discloses what the breeder has done by way of improvement in this made-up variety.

St. Bernards, Mastiffs, Great Danes, and



[Photo.]

White Pomeranians.

[Copyright.]

which, alas, promises to be obliterated by their introduction into a country where such a provision is no longer necessary.

The true Arab colour is golden. These Slughis prove the most faithful of pets, and are sporting dogs of gentle nature and biddable disposition.

The Labrador, of which there were some excellent dogs shown, is an introduction from St. John's in the early thirties, and is a retriever distinguished for his marvellous sagacity, tender mouth, and tireless working in the field. It is a breed over whose qualities there have been years of discussion and controversy.

Those who own Labradors consider them unsurpassable; those who do not, say they are greatly overrated. From my own personal observation I can truthfully say there is no retriever in the world equal to the Labrador, and coming from a race that for centuries has had to retrieve birds and fish for its own living, as well as that of his master, it is little to be wondered at.

Bulldogs were looking uglier than ever,

Bloodhounds retain their worshippers and their remodellers, so the type varies in every four or five years, according to the prolificness of the prize-winning kennel and the alterations in type which breeding has resulted in.

With all other breeds we are so familiar that no further reference is needed in these columns, and, like Tennyson's river, "they go on for ever and for ever." They also lack interest from the familiarity which breeds indifference, though our respect is in no way lessened.



The Queen's Borzoi.

The portrait is that of Her Majesty's Head Kennelman.

[Photo. Copyright.]



[Photo.]

Royal Italian Greyhounds.

A favourite breed of the King of Siam.

[Copyright.]

anequaled, and in their own country their life is the very busy, useful one of driving and rounding up herds of reindeer, dragging the sledges over the tundras (plains) when the reindeer are not available. They also tow boats across the streams and rivers, and some are even trained to find fording places, so clever are they. Another of their uses is to guard the tents from bears.

A breed of ancient lineage and Arabian romance has come to the front, the Slughis, and this was accomplished by a lady who is enamoured of them sending one as a gift to the young Queen of Spain. Naturally, there were some exhibited at the Palace.

The Arabs use the Slughis for hunting gazelles, and generally use hawks with them, the latter bringing down the gazelle



[Photo.]

Japanese Spaniels.

A favourite breed of Queen Alexandra's, whose pet is "Togo," a wonderful little dog weighing only 2 lbs.

[Copyright.]

The Garden.

Hints on Growing Roses.

To see roses in their beauty they should be planted in a bed away from other flowers.

First, trench the ground deeply, adding as the work proceeds a little horse manure. To give the soil a chance to settle down,

When roses arrive they should be immediately unpacked (except when frosty), and the roots placed in water for about two hours; then cut back the coarse roots and plant at once.

Should the weather be frosty when the plants arrive, then they cannot be planted, and great care must be taken. Place the trees in a sheltered corner, and cover well

Give roses one good watering when planted, and see that they are firmly staked.

Should the trees suffer from greenfly, syringe well with soapy water.

Roses are always a welcome addition for house decoration, and placed in vases, as shown in the illustration, will give a very pleasing effect.

Growing roses in pots is becoming very popular.

What look better than roses in the conservatory, when outside in the garden there is hardly a flower to be seen.

To get the best results, purchase your roses when they have been potted for at least one year. Another very satisfactory manner is to procure ground plants; they should be potted in the early autumn and kept outside until the hard weather sets in. Then put into cool frames, keeping them there until no fire is needed in the greenhouse. When this time arrives place them in the greenhouse, and they will flower about May.

After the first season they can be forced



Photo.]

[W. J. Vasey.

A Rose-clad Cottage.

Notice the thickness of the stems and the great distance the trails have reached.

the beds should be prepared a short time before planting.

November is the best month for planting, but later on will do, if the ground be in a good condition.

A mistake frequently made is to leave the roses for days packed just as they ar-

with matting or sacks, planting immediately the weather permits.

Dwarf roses should be planted about 1½ feet apart, standard from two to three feet apart. Climbers should be given plenty of room, and planted in very rich soil, as they exhaust the land quickly standing in the same ground for years and blooming freely.



Photo.]

[W. Hanson.

La France.

One of the best roses for indoor or outdoor culture,



Photo.]

[H. Quilter.

A Beautiful Example of Flower Arrangement.

A vase should always be lightly dressed and as few colours as possible selected.

As will be seen by the illustration, "A Rose-clad Cottage," the tree is weighed down with beautiful blooms. What chance of living would a climbing rose of this description stand had it not been planted in rich soil?

Readers will notice the thickness of the stems and the enormous distance the trails have reached, can safely be bought by amateurs who clearly showing that the tree is of years' standing, and, in fact, a good companion for the old cottage.

for winter flowering. Should it be necessary to smoke the house to destroy green fly, it is best done when the plants are damp, the evening being the best time. The dead fly should be removed in the morning with a syringe. An amateur can easily fumigate his greenhouse. The XI.ALL Fumigator is easily worked. Directions are given with each tin of vaporising compound.

A good potting mould for greenhouse roses contains two portions loam or field soil, half portion leaf mould, and half portion of old manure.

The beautiful rose "La France," as shown in the illustration, is one of the best roses for indoor or outdoor culture, and wish for a rose for decoration, show, or buttonhole. "La France" will be found in every rose garden, and is admired wherever seen.

A list of the best roses to grow will be given next week.

How Fishes Got their Scales.

By W. P. PYCRAFT.

THOUGH we naturally regard fishes as pre-eminently scaly creatures, yet a moment's reflection will remind us that this attribute is by no means universal, and as a striking instance thereof we may cite the eel. But the fact is perhaps not so generally realised that these scales have a strange history; they provide us indeed with one of the most instructive lessons in evolution which could be desired.

To properly appreciate this we must begin with a structure that is very unscale-like to look at, to wit, one of the little bony denticles such as make up the "shagreen" jacket of the shark, and dog-fish; but as these are very small, one of the huge, spiny bodies which stud the bodies of many, the ray fishes or skate, will serve our purpose better. This, when isolated, is found to consist of a button-like base supporting a tooth-like or hook-like enamel-cased spine.

The sharks and dog-fishes are covered with just such bodies as this, only infinitely smaller; and it is the hard, enamelled spines thereof which made the skin of these fishes so much in demand before the days of sandpaper. Like the lion's tongue, if the hand be passed over the body of, say, a dog-fish, in the direction of the tail, the smoothness of satin will be felt, but a reversal of this movement is by no means so pleasant. Scales of this kind are of a very primitive type.

Later in time fishes appeared having the body encased in a bony armour of closely-fitting, rhomboidal plates, covered with enamel, derived, we may imagine, by the flattening out of the spine, such as is met with in the skate. Nature has kindly preserved for the benefit of nature students a few examples of living fishes covered with such armour, of which the *Polypterus*, or "bichir," shown in Fig. 2, is a conspicuous example; the "Ear-pike," or *Lepidosteus*, of North America, is another.

These curious fishes are the isolated survivors of different branches of extinct types of species long since extinct, and hence well deserve the designation of "living fossils," which has been bestowed upon them. It is from a bony mosaic, such as is seen in the "bichir," that the scales of modern fishes have been derived, and this by the loss of the enamel and the re-

duction of the bony base to the thinnest of thin plates, usually overlapping one another like tiles in a roof.

But, between this type of covering, well seen in the perch, or the roach, for example, and the naked skin of the eel, we have many gradations in degeneracy. And perhaps the most interesting of these is that seen in a race of carp known as "leather carp," wherein most of the scales have absolutely disappeared, leaving a few along the back and sides of the body of huge size, as may be seen in Fig. 1.

Yet another extreme is met with in certain fishes in which the scales have

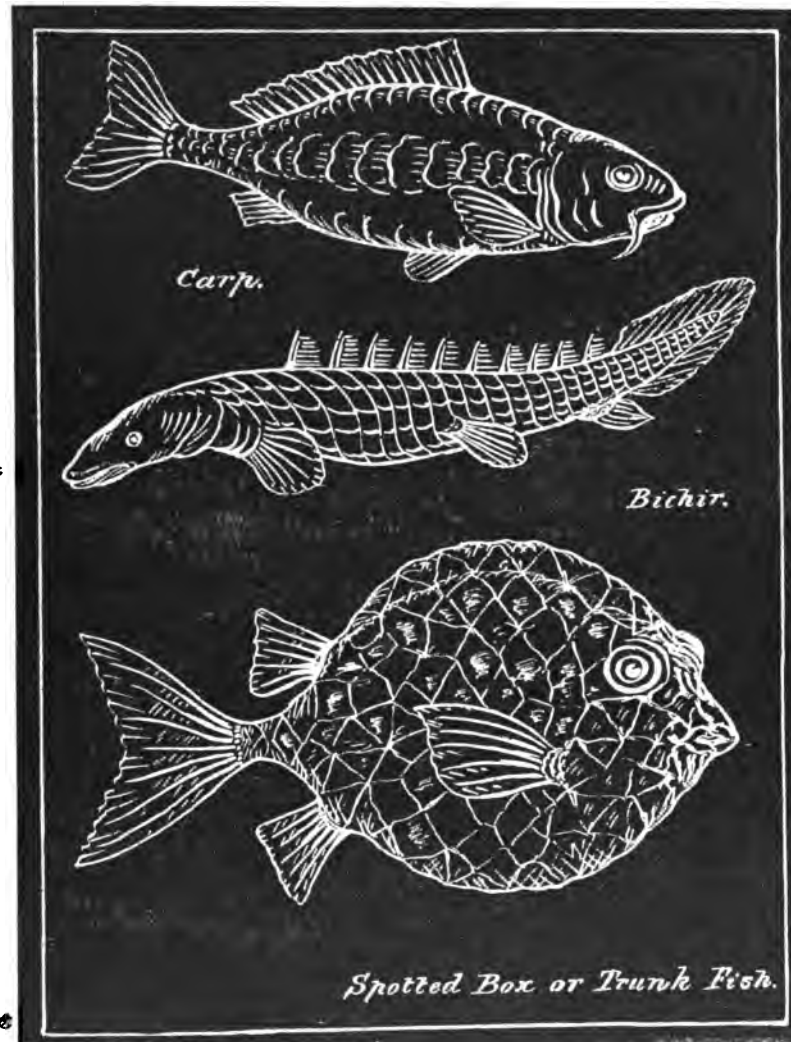
box-fish or trunk-fish. Only the snout, the bases of the fins, and the hind part of the tail are covered with soft skin, the rest of the body being invested in a hard, unyielding, bony box—hence the name coffin-fish. This box, when examined, is found to be made up of a series of hexagonal plates arranged like a mosaic, and these plates are really modified scales!

Nature would seem to have been pleased with the oddity of these creatures, inasmuch as she has made some twenty species thereof, some of which have added horns to their armour! What factors have really been at work to shape such queer creatures it is impossible to say. But there are natives of tropical and sub-tropical waters which, as is well known, swarm with life. Now where this is the case competition must be great, and competition means that many must adopt some device against being eaten.

The coffin-fish has certainly met with a large share of success, but its relatives, the globe and porcupine fishes, have hit on an even better plan, the latter bristling with the most formidable armature of bony spikes imaginable!

But the globe or porcupine fish does not always "bristle," and this because his armour is of a less inflexible nature than that of the box-fish. Normally, when feeding, or resting, he is of the typical fish-like form, and appears to be covered with long, backwardly-directed spikes, but the moment danger is scented he inflates his body till it assumes the globe-shaped form from which he takes one of his names, and at the same time the spines are brought into action, so that they stand up all round him at right angles to the body, thereby making a most forbidding mouthful even for the hungriest fish!

During this inflated condition, curiously enough, the creature floats, back downwards, and with the under surface of the body projecting above the water; this, catching the wind, blows him along to a place of safety. The air is then expelled through the mouth, rushing out with a hissing sound, when the body is righted again and swimming once more becomes the order of the day! Some of the globe-fishes have the body studded with relatively minute spines instead of these formidable spikes, and such species we must presume have fewer enemies, or adopt some other plan of escape therefrom.



Three Types of Fish that Illustrate the Various Stages in the Evolution of Scales.

thickened and joined to form an immobile, bony armour. The strange sea-horses, and the "coffin" fishes are examples of this kind of armour; while the yet more remarkable "tortoise-fish," or *Amphisila*, of the Indo-Pacific, has adopted a more extraordinary armour, since the lines of the skeleton have combined to form a cuirass—prolonged backwards into a spine beyond the tail—comparable to that worn by the tortoise!

One of the "coffin fishes" forms the subject of our illustration, Fig. 3. This particular species is known as the spotted

A Page for the Children.

Performing Cats and Dogs.

DO not know whether it is the same with everybody; but to me a performing cat always seems much more clever than a performing dog. I do not mean that it does more wonderful tricks; because, of course, the dog can beat the cat easily in the difficult tricks it will learn. Only when a cat does quite a simple little trick, like the tabby that is begging in this picture, one cannot help thinking much more of it than if a dog did the same thing.

And we are quite right; because it is very much easier for a dog than for a cat to learn a trick. Why is this?

The reason is that the original wild cat from



Photo.]

[Miss E. M. Goddard.

"Begging."

which our tame cats are descended, was a solitary animal; whereas, the original wild dogs were creatures which hunted in packs. Every pack had its leaders; and so obedience is natural to the dog. He recognises his master as his leader and tries to obey him willingly; so he is easily taught to perform tricks.

But the original wild cat knew no leaders. It lived and fought for its food and its children and relied upon its own strength. It followed its own ideas and hunted alone.

This is why a cat is so different from a dog in its general behaviour. The dog is always delighted to be taken notice of and to follow his master wherever he goes. Indeed, the difficulty is to teach a dog not to fawn upon you too much and to go away when bidden.

With a cat, on the other hand, you may try all kinds of coaxing; but, unless it is in the mood to be friendly, it will just sit and blink at you, or will perhaps calmly turn its back and begin to clean its fur.

The same difference comes out if a dog or cat has to be punished. The whipped dog cringes more closely to his master; the cat bolts to the coal cellar or over the garden wall. Her wild instinct is to escape from the scene of trouble; but the wild dog would starve if he left the pack, no matter how severely the leader punished him.

So, since neither coaxing nor punishing will bring a cat to you unless she is inclined to come, it is not easy to teach her tricks; though there are some which she can be made to teach herself.

By making a cat sit for her meals on a chair at a little distance from the table, she is easily taught to beg, to ask for food by mewing, and to go through various antics, one of the prettiest of which is a self-taught trick of some cats to sit upright, like the cat in the picture, and wave the paws rapidly up and down. The cat then looks as if she were playing some sort of game, and we call it "batting."

One cat I have known was really able to bat. She had developed a habit of striking away any soft ball which was tossed to her; so wickets used to be set up and the cat placed in front of them; but no one ever succeeded in bowling her out, except when she was not looking. The amusing part of the game was that every time the cat hit the ball away a fox terrier ran after it and brought it to the bowler.

Home-made Goblins.

Though this curious little company were manufactured on a summer afternoon, with flowers for gowns, seed-pods for arms and heads, and seeds for features, the game of making goblins or pixies out of natural objects can be played in autumn and winter too. Indeed at any season when country walks are possible, it lends great interest to them if everyone collects the best materials that he or she can find for making a small figure a few



Photo.]

Pixies.

All made from the seeds, seed-pods, and fallen petals of flowers.

inches high. In the evening these can be put together and exhibited, a small prize being awarded to the best.

The figures need not always, of course, be human in shape; and I recollect how, many years ago, my brother and I, as boys, con-



Photos]

[James Hepburn.

The Early Bird and the Tug-of-War.

cocted a weird insect with great success. It had a purple gooseberry for a body, a blue-black whortle berry for a head, and a small, red cock's feather for a tail, with six little stalks for legs. There was a great scare at the time about the Colorado beetle, which was expected to come over and destroy all the potatoes in Britain; so we called the old gardener to come and look at this "foreign-looking insect" on the path. He came, but he did not look long, Colorado beetle or not, he was not taking any chances. So up went his spade and the next moment the thing was squashed flat. Grinding its remains into the gravel with his heel, the gardener went back to his work.

The Fate of the Early Worm.

All children probably have thought now and then that, if it is the early bird which gets the worm as a reward for early rising, the reward which the worm gets for the same thing is not very clear. But what is early for the bird is late for the worm, who ought to be safely out of sight in his burrow before the birds are about.

This they cannot always manage, however, and the pictures show the sad fate of the worm which remained at the door of his burrow by daylight until a young chicken espied him. He did his best to resist capture; but it was no good, and the second picture shows what happened.

until a young chicken espied him. He did his best to resist capture; but it was no good, and the second picture shows what happened.

Nature Records of the Week.

(Sent in by readers of THE COUNTRY-SIDE.)

GREAT BUSTARD.—Some confirmation comes of the reported appearance of a great bustard in the Cleveland district of Yorkshire on October 11th. A Redcar reader (H. W. Cook) writes that he had of it at the time, and was told that the bird had been identified by a competent naturalist and was seen at Carlton in Cleveland on the date mentioned. If so, however, many persons should have seen it since.

RED ADDERS.—In reply to query; one was killed in the Habberley Valley of the Severn, June, 1902.—(J. A. P. Crompton.) One killed June, 1906, at Rothbury, Northumberland.—(J. Lynn.)

Birds on Migration.

OCTOBER NOTES FROM THE BELL ROCK LIGHTHOUSE.—On the first days of the months goldcrests were on the lantern—early, if Scandinavian migrants, but I am inclined to think they would be home breeding birds shifting southwards. On the 3rd and 4th we had a chaffinch, pipits, larks, and starlings. On the 9th starlings and four chaffinches were on the lantern. On the 12th we had not a numerous, but, I think, rather a unique, interesting gathering consisting of the following members:—A willow-warbler, starling, ring-ouzel, snow-bunting, and three red-wings. The warbler had been leaving our country, probably also the ouzel, the others likely being fresh arrivals. Many flocks of puffins were seen flying northward on the 14th and 15th. With a very severe gale and heavy sea we had on 19th, the large flocks of winter resident eiders were dispersed, but are again gradually returning. On the morning of the 21st there were thousands of birds flying in the rays of the light, many striking the lantern or dome and falling into the sea. Great numbers also rested on the lantern gratings or rails, but the majority kept circling round in the rays. Fieldfares, starlings, redwings, and blackbirds were the most numerous in this great influx; the others seen on the lantern being several goldcrests, a few skylarks, two woodlarks, one song thrush, and one ring-ouzel. I hardly think I ever saw so many birds round a lighthouse lantern in my 28 years' experience. There were also many about the following night, but the explosive fog signal booming every five minutes kept them at a distance or made them seek quieter quarters. Five starlings, however, braved it out on the lantern grating all the night, only about fifteen feet from the explosion of the 4 oz. charge of tonite. In the morning a short-eared owl was found sitting in one of the tower windows and was kept captive for a day, but as it refused to dine on fresh redwing was set at liberty, and was, as is usual with such interlopers, mobbed, hustled, assaulted, and doubtless insulted, by a mixed lot of gulls, which, no doubt, thought cat-face had no right trespassing on their domains. During the same day (22nd) a few starlings, blackbirds, fieldfares, and two bramblings were on the rocks at low water. Several grey crows have been seen passing towards the land—usual migrants at this season of the year. On several other occasions starlings have visited, even in their quaint inquisitive forward manner, venturing in at the kitchen window. Gannets are still frequently fishing round the reef.—ROBERT CLYNE.

SWALLOWS OR HOUSEMARTINS, seen, October 1st, Ulverston, Lancs. October 3rd, Newton, Cheshire. October 5th, Leicester; Blewbury, Berks. October 7th, Liverpool, Lancs.; Little Melton, Norfolk; Northwich, Cheshire. October 8th, Cheltenham, Gloucester; Aldershot, Hants. October 9th, London, W. October 10th, London, N. October 11th, Wimbledon,

Surrey. October 16th, Quorn, Leicester; Margate, Kent. October 17th, Manchester, Lancs.; Winsford, Cheshire. October 18th, Uckfield, Sussex. October 19th, Horsham, Sussex. October 20th, Thelwall, Cheshire; West Lothian, Linlithgow. October 21st, Edmonton, Middlesex; Penarth, Glamorgan; Woodford Green, Essex; Ansty Town, Leics. October 23rd, Severn-Stoke, Worcester; Eastbourne, Sussex; Henley, Oxon. October 24th, Aboyne, Aberdeenshire; Rotherham, Yorks; Ipswich, Suffolk. October 25th, Bridgetown, Wexford; Hever, Kent. October 28th, Masham, Yorks. October 29th, Ross-on-Wye, Hereford. October 30th, Jedburgh, Roxburgh. October 31st, Pinner, Middlesex; November 3rd, Eastbourne, Sussex. November 6th, Wells, Norfolk.

FIELDFARES.—Hundreds passing Sheffield, October 23rd.—(W. Waite.) Arrived in great numbers near Chorley, Lancs., on October 25th.—(W. C. Hanson.) Hendon, Middlesex, on October 27th.—(J. E. Nash.) Quorn, Leics., October 18th.—(G. Frisby.) **GANNET.**—Mature specimen killed by blow of a spade whilst rabbiting, October 30th, at Adlingfleet, S.O., Yorks.—(E. S. Banks.) Fine immature specimen shot, September 8th, near Woodbridge, Suffolk.—(W. Goodchild, jun.) **LITTLE GREBES.**—Two seen on Reservoir at Quorn, Leics., on October 16th.—(G. Frisby.) One heard passing over Henley-on-Thames late at night on October 19th.—(W. J. Street.) **NOTES FROM CULLEN, BANFFS., N.B.**—Numbers of curlew, peewits, and golden plover passing southwards on October 11th from 8.30 p.m. to 10.30 p.m.—(J. Gowan.) **WILD GRESE.**—Between 40 and 50 flying low over Southport, Lancs., on October 29th.—(J. Watson.) Several heard passing over Henley-on-Thames late at night, October 17th.—(W. J. Street.) Thirteen or fourteen passing over Sancton, Yorks., on October 31st, probably Brent geese.—(E. R. Paton.) Eight seen flying over Portland on October 24th.—(H. P. O. Cleave.) **HERONS.**—Thirteen seen flying over Charing, Kent, on October 31st with an easterly wind.—(L. Sulston.) **BLACK-HEADED GULLS.**—200 to 250 seen on October 21st flying west at Moss Side, Manchester.—(F. Thorp.) **CORMORANT.**—Two seen October 16th; one shot October 18th at Quorn, Leics.—(P. Frisby.) **HOODED CROWS.**—Two seen for the first time near Rotherham, Yorks., on October 20th.—(J. B. Garnett.) **QUAIL.**—Two seen on September 12th at Styrmp, Notts.—(R. E. Hodgkinson.) **YELLOW WAGTAIL.**—Several readers report this bird as seen during the last days of October and early in November; but they are perhaps unaware that the grey wagtail, now on migration, is as brilliantly yellow beneath as the yellow wagtail, and it is probably this bird they have seen.

Birds' Song.

BLUE TIT.—Singing at Moss Side, Manchester, on October 7th.—(F. Thorp.) **GOLDCREST.** singing on October 22nd at Weybridge, Surrey.—(J. R. Harding.) **HEDGE SPARROW,** first heard at Quorn, Leics., on October 25th.—(G. Frisby.) Wells, Norfolk, November 4th.—(E. K. R.) **WRENS, SKYLARKS, THRUSHES,** singing almost everywhere during latter part of October.

Increase and Decrease of Birds.

CORNCRAKES very scarce in N. Cornwall and around Plymouth.—(H. P. O. Cleave.) Not heard this year at Blewbury, Berks.—(M. V. G. Hunt.) **CORMORANTS,** exceptionally numerous around Plymouth.—(H. P. O. Cleave.) **RAVENS,** appear to be more numerous on Dartmoor.—(H. P. O. Cleave.) **BULLFINCHES,** very numerous at Hever, Kent.—(W. Y. Hurley.)

London Notes.

SPARROW, with white flight feathers at Poplar, E., on October 27th.—(E. Taffe.) Similar bird in Liverpool Road, N.—(R. W. Pethen.) An aluminium coloured specimen with a brown cap seen on Barnes Common on October 27th.—(P. W. Wright.) With white back and a zig-zag black line down each wing seen on October 21st in Hyde Park.—(J. Sauerbrei.) **FUNGI,** Champignon, Grey Parasol, Sulphur Tuft, and Dryad's Saddle, found in Kensington Gardens, October 10th.—(W. P. K. Neale.) **SYCAMORE TREE,** in fresh leaf in the Tower Gardens on October 10th.—(E. M. Chaplin.) **SWALLOWS:** Eleven arrived in Kensington Gardens on October 9th.—(W. P. K. Neale.) **SPARROW-HAWK,** seen flying, on October 26th, over the Serpentine in Hyde Park, probably the same bird previously reported in Hyde Park.—(J. R. Harding.) **HUMMING BIRD** **HAWK MOTHS,** three seen on Antirrhinum flowers in the Rough Gardens in Kensington Gardens.—(W. P. K. Neale.) **GULLS,** seen several times over Islington.—(R. W. Pethen.) **KESTREL,** seen at Millwall, E., on November 3rd.—(H. M. Etherington.) **HOUSE-MARTIN,** Four seen October 10th in Liverpool Road, N.—(R. W. Pethen.)

Marked Birds.

ROBIN: A nearly pure white specimen seen in the Terrace Gardens, Richmond, Surrey, on October 13th.—(F. Gammon.) **BLACKBIRD,** with pied head, has been constantly seen during the last thirteen months in the Royal Gardens, Kew.—(F. Gammon.) One with white collar, head sprinkled with white, and white spot on back, at Severn-Stoke, Worcs.—(Miss I. Norman.) **CHAFFINCH,** with head, neck, and breast creamy white; the back white except for a few brown feathers, the wings also being nearly all white, at Dunderum, Co. Dublin.—(Miss C. Moore.)

Butterflies and Moths.

STRIPED HAWK MOTH (Livornica), caught on October 18th at Manchester.—(H. H. Storey.) **DEATH'S HEAD MOTH,** early in October at Glasgow.—(R. Stalker.) **CONVOLVULUS HAWK MOTH:** A fine specimen taken at Cheltenham, Glos., on October 13th.—(J. M. Skarratt.) **HUMMING BIRD MOTH:** There has evidently been unusual abundance of this moth, for records dated October 20th to November 4th have come from all parts of the South of England, including London. **SWALLOWTAIL MOTH,** second brood, September 29th, at Manor Park, Essex.—(R. D. N.)

Plants.

RARE WILD FLOWERS.—The following have occurred near Rotherham during the past few years:—Yellow star-thistle, *Centaurea solstitialis*, sulphur clover, *Trifolium ochroleucum*, Deptford pink, *Dianthus armeria*.—(J. H. Payne, West Melton, Rotherham.)

GIANT MUSHROOM, weighing over 17 ozs., with a diameter 14 inches, found near Darlington.—(F. Rodgers.) **GIANT PUFF-BALL,** 4½ inches in circumference, in the possession of Mr. T. J. Moore, who has had it six years, was probably larger when growing.

LATE FRUITS.—Ripe strawberries, October 30th, at Manorbier, Pem.—(M. L. Salmon.) Raspberries, November 1st, at Southborough, Kent.—(F. E. Leigh Sarney.) Raspberries on November 4th at Grandpont, Oxford.—(A. Dolley.)

Butterflies in Art.—To say that the butterfly tablets produced by Messrs. S. W. Denton and Co., 99, Regent Street, London, are beautiful is unnecessary; because they contain perfect specimens of some of the most beautiful butterflies of the world, permanently enclosed behind glass, with wings outspread against a snow-white background. The prices of these delightful ornaments range from 2s. upwards.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 80. VOL. 4.

NOVEMBER 24, 1906.

1d. WEEKLY.

Some Beautiful Rhododendrons.

By F. M. WELLS.

Author of "The Garden Decorative," "The Suburban Garden," &c.

THERE are positions in the majority of gardens in which much additional beauty would be achieved, if, for some part of the year, they could display a mass of blossom. These positions, perhaps, are not suitable for the ordinary hardy perennials, but need something deeper rooted, tougher of growth, and of great endurance. In fact, flowering shrubs alone will meet the need; and, as often as not, those that are evergreen in habit will prove advisable, especially if they are required to form a setting or background.

Now, in making a selection, due consideration should be given to the value of those shrubs producing blossom large enough, or having the individual flowers massed into bunches, or heads, to be effective and decorative from distant points of view.

Few evergreen shrubs, or any other shrub, for that matter, fulfil this important condition like the rhododendron; while in addition to this quality, the range of colour, it should be remembered, is both wide and beautiful—the pale shades from purest white, through the blush, and tender pinks, pass into vivid rose shades, and fiery crimsons. I would say here, get clear, clean tones; they are far more effective than less decided colouring.

Largely planted as rhododendrons are nowadays, they would be more general still if it were more widely known that peat is not essential to their well-being. They

like peat, and they flourish in it, but they can be grown as successfully, and flower as profusely, in a good loamy soil as long as it is of sufficient depth, and if it is of a

has been done by hybridizing to produce a race hardy enough to grow in the open. Such a variety, for instance, as *R. Gibsoni* (illustrated) has much of the delicacy of appearance of an azalea. In really favourable aspects and districts this variety is grown in the open, but this and other Indian varieties flower early, and are, therefore, too often cut by spring frosts. They are, however, delightful conservatory subjects, where they cannot be grown out-of-doors, and flourish best when turned out of their pots into the conservatory border. I must not forget to call attention to the Malayan species, but these need a winter temperature not less than 48 degrees.

But to return for a moment to the hardy species. There is no position in which they can be more picturesquely situated than when established by the garden stream, pond, or lake. It should be noted, too, that the hardy rhododendrons are excellent town and suburban subjects.



Photo.]

Rhododendron luscombiana.

[S. M. Wallace.]

A fine specimen of the decorative effect of an isolated flowering bush.

fibrous nature so much the better; but lime must not be an ingredient, as for this rhododendrons would seem to have an unquerable objection.

By a careful selection of varieties a flowering period from April to the end of June may be secured; there are to be had many excellent named varieties, the results of modern hybridizing. Those here illustrated—*R. luscombiana* and *R. Coombe Royal*—are grand specimens of the decorative effect of isolated specimens, and I would point out that most flowering shrubs gain immensely by a dark background such as trees give; not all—

not the almond trees, for instance; but that is another story. Beside those named, *R.*

Kate Waterer, *Duchess of Connaught*, *Mrs. John Clutton*, *Mrs. Thomas Agnew*, *Purity*, *Snowflake*, *Verschaffeltii*, *W. E. Gladstone*, *Miss Jekyll*, and *Mrs. Holford* are all first-class varieties.

The Himalayan rhododendrons are even more beautiful, and here again much



Photo.]

R. Gibsoni.

[S. M. Wallace.]

A Rhododendron having much of the delicacy of appearance of the Azalea.



Photo.]

R. Coombe Royal.

[S. M. Wallace.]

Another fine specimen of Rhododendron.

In smoky districts they can be kept in better condition if the syringe is used from time to time.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, NOVEMBER 24, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

The Wing-Claws of Birds.

By the Rev. MAURICE C. H. BIRD, M.A., M.B.O.U.

THE columns of the COUNTRY-SIDE lately contained a reference to the fact that no mention is made, in many ornithological works, of the claw which exists on the wing of the moorhen. A few other British birds still possess such claws, but in the adult stage they are so comparatively small and so entirely covered by the plumage, as to escape the notice of a casual observer; and, in these hurrying wasteful days, chickens' wings are not often so carefully dissected on our dinner plates as to lead to the discovery that a similar wing-claw frequently occurs in domestic poultry. In British birds this claw is quite rudimentary, and cannot be of any use to its possessors after the comparatively long and stiff feathers which eventually surround it have grown sufficiently to project beyond its point.

But if readers will allow a young moorhen or coot, whilst still in the down, to crawl over their hands they will find that, in using its fore limbs to aid progression, after the manner of a bat or new-born kitten under similar circumstances its incurved claws will be felt upon the hand. From this fact we may conclude that, in infancy, this rudimentary nail may aid these baby birds in passing through and over semi-submerged vegetation; but after full plumage is assumed these claws cease to be functional. In what few other British birds a wing-claw persists it appears as a straight spine, here the development of the nail is further arrested and the physical structure has again degenerated, and in most birds the absence of any such claws suggests that their former usefulness has long since completely passed away. Evolutionists have demonstrated the descent of present-day birds from prehistoric reptiles, and comparative anatomists have traced the connecting links between the wings of bats and birds and the forelimbs of bipeds and quadrupeds, and shown that the wing-claws of birds and bats have a common origin with horses' hoofs and human finger nails. Ages of inaction have rendered obsolete many different parts of animal bodies, whilst constant exercise has developed others in many wonderful directions and degrees.

The marvellous metamorphosis through which frog and toad pass after hatching clearly indicates their pristine ancestry and in the hidden embryo-life of many of the higher animals the lines along which our present bodies have been prepared for us are as surely suggested, and even in our own adult stage remarkable reversionary characters are now and then observable, such as hare-lip, moveable scalp and ears, and extendable nostrils, whilst the superfluous vermiform appendix is both prevalent, and in a certain sense popular. Why, what we now call rudimentary or vestigial structures, such as wing-claws, should still continue to persist in some species of birds, and yet have become entirely eliminated from others which we nevertheless classify as nearly allied forms, is curious though immaterial, for more than sufficient similarities of structure may be traced by the careful and diligent searcher

into nature's secrets to demonstrate the descent of all more or less highly specialised forms from a common ancestry, although at times the parting of the ways is somewhat shady.

Certain, however, it must be, to the open mind that the wing-claws and wing spines of birds are but the horny-clad tips of aborted and functionless fingers; although in common fairness we must allow that, looked at from the eagle's or frigate bird's point of view, our ineffectual attempts to climb the upper air might as well be put down by them to our possessing but withered wings. But at any rate we possess four finger nails and one thumb nail on each hand, birds can but lay claim to two such appendages at most, for the bony-structured spurs proper, whether situated on leg or wing (and there are two such, sometimes), are quite distinct in use, construction and origin from the organs under consideration, which, as is the case with hair and feathers, are mere superficial structures arising from the skin and quite unconnected with the skeleton.

There are some birds that have both wing-claws and wing-spurs, but the latter are always more or less useful and used by the adults as weapons of offence, whilst if we trace the former through all the known families of birds, past and present, we shall find not only that the use of claws now passes away with adolescence, but also that the earliest forms had the most numerous and the most highly developed claws. Starting with the famous fossil pterodactyl, half reptile and half bird, which had three or four finger fingers armed with claws, and passing on to the extinct archæopteryx which had a claw on the pollex or thumb, and at the extremity of the second and third digit also, we find in the oldest forms of existing bird-life, ostrich and rhea for example, two claws only, one at the end of the pollex, thumb or bastard wing, and another towards the apex of the pinion; whilst many birds have one claw only, which is situated either at the extremity of the index finger or pinion, as in cassowary, emu, apteryx and swan; or on the thumb or bastard-wing, as in moorhen, coot, rail, gallinule, some geese, fowls and birds of prey.

It has also been found, in certain individual cases, in the blackbird and whitethroat. In the embryos of ostriches and rheas traces of a third claw have been discovered, and in a similar stage in the life history of the domestic chicken the second digit has a claw, but in each case these embryonic claws are absorbed before hatching takes place. In a bird to which I have not yet referred, although it is the most interesting and remarkable of present day species, the hoatzin of South America, the immature bird has a claw on the index as well as on the pollex, both of which are functional, but cease to be so ere the breeding plumage is assumed.

Mr. J. J. Quelch, who has studied these curious birds in British Guiana, says that soon after hatching the nestlings begin to crawl about by means of their wings and legs, the well developed claws at end of bastard wing and pinion joint being constantly in use for holding and clinging to surrounding objects. If one attempts to draw them from the nest by means of their legs they cling firmly to the twigs and sticks, of which the nest is composed, both with beak and wings, and if the nest be upset they hold on as firmly to any object with which they may come in contact, by means of bill, feet and wings, making considerable use of the bill, not only to reach objects above them, but also, with the help of the clawed wings, to raise themselves to a higher level. When the parent bird is driven from the nest containing newly hatched young, the nestlings crawl on all fours out of the nest (which is usually placed on low trees or amongst scrub in swampy places) and hide themselves amongst the branches; should any of them fall into the water below it is in no wise disconcerted but swims and dives boldly.

In conclusion then, as most birds (such as our moorhen), which still retain wing-claws, have one only on each wing, some few two, and some, in embryo, rudiments of a second and even of a third; so, also, most birds have only three digits, but the hoatzin, in its embryo stage, has distinct vestiges of a fourth finger. As adult life advances the two wing-claws in this singular species gradually abort, and one disappears altogether, and the flight feathers, whole natural development was arrested whilst the claws remained functional, grow rapidly to take their places as means of progression. Thus this wonderful bird shows us, in its individual life history, something of the past steps in avian structure.

Country-Side Notes.

Warham, Norfolk.

"If there is a thing I love it is exploring the little paths of an unknown wood, finding out the corners where it keeps its periwinkles and anemones, discovering its birds' nests, waiting motionless for its hedgehogs and squirrels, and even searching out those luscious recesses, oozy and green, where it keeps its happy slugs.

"The Adventures of Elizabeth in Ruegen."—Sent by EASTWOOD KIDSON.

THE time has come round again for those of us who have relatives or friends in distant parts of the Empire to think of some little act of kindness by which we may reach their hearts at Christmastide and encourage them to face another year of exile with knowledge of the love that they have left behind at home. And it is really not solely in the interests of the paper that I recommend an annual subscription to THE COUNTRY-SIDE as, in my honest opinion, one of the best Christmas presents that any of us can send oversea.

Those who stay at home, living their lives in the old social grooves, can hardly understand the intense pleasure which a reminder of the sweet air of British greenfields brings to Britons abroad. To them home politics seem parochial and narrow; home fads and fashions exaggerated and absurd; the newspapers are filled with accounts of plays which they have never seen, books they do not want to read, and scandals about people they have never heard of. They get "out of touch" with everything. Even the witticisms in *Punch* begin to escape them, because these so often depend upon allusions to incidents and catchwords of the London day. But in proportion as such artificial topics become elusive and unsatisfactory, the mind of the exile grows more tenderly responsive to the few chords which still vibrate to the true old notes of "home," and there are none more true than those which recall the voices of the birds amid the green of English fields. And that THE COUNTRY-SIDE succeeds in striking these old notes I have abundant testimony from readers in India, Australia, Africa, and America.

"THE COUNTRY-SIDE," wrote Mr. Mervyn G. Palmer, "finds its way even to the wilds of Nicaragua and it comes as a great delight." That message hails from Camoapa, Nicaragua, S. America; and another from Tukanaruo, Haruera, Taranaki, New Zealand, runs:—"I look for the paper every mail day and open it first of the lot." From Mortlake, Victoria, Australia, comes this:—"You can scarcely realise the very great pleasure the advent of THE COUNTRY-SIDE is to many Bush homes out here in the sunny south. . . . In perusing its pages I seem to get into closer touch with the dear homeland, to fancy myself once again wandering through its woods listening to the notes of the thrush and blackbird or watching the merry antics of the squirrels among the beech trees. Thanks, many thanks, Sir, for the pleasure your paper gives me." "A welcome weekly waft of old country

air" is the way in which Mr. H. Gearing, Atlas Works, Capetown, describes the paper.

I could quote from dozens of other letters, all evidently written by men whose hearts have been touched from week to week by the reminders in our pages of country sights and sounds which were once part of their lives "at home." And the more years a man spends in exile—as I know by experience—the more he longs for those sights and sounds again. It is for this reason that I have confidence in recommending an annual subscription to THE COUNTRY-SIDE as one of the very best Christmas presents which you can send to your friends oversea—a present which has the great advantage of being renewed weekly, reminding the recipient on every mail day of the kind thought which dictates the gift. If, in recommending this Christmas present, I have another motive also, i.e., the desire to extend the organisation of the B.E.N.A. in distant parts of the Empire, I hope that no readers will think the 8s. 8d. any the worse spent on that account.

Among the year's late roses one interesting blossom came to me from a cutting of the rose tree which grows above General Gordon's grave at Khartoum. It was gathered on November 12th, an ordinary pink bushrose with a very sweet scent—differing in this respect very markedly from something which the same reader once sent. "I have never forgiven myself," he writes, "for having once in the early days of THE COUNTRY-SIDE—and a hot day too—sent you a snake which had swallowed a toad. I wonder what your thoughts of the sender were? But you patiently abstained from comment. I would like to add my humble thanks to the host of others who gain so much interesting and valuable experience week by week from your 'Country-side Notes.' I have learned to look forward to the coming of your paper as I would to the visit of an old friend, and of all the weekly papers I have I like THE COUNTRY-SIDE best of all." In those early, hot days of THE COUNTRY-SIDE's first summer I had some very trying "specimens"; but I remember that snake-and-toad!

I am afraid that the conclusion to be drawn from the number of letters received on the subject of "Mercy in Sport," is that there is really no sure and painless method of putting a wounded bird to death. The majority of correspondents; however, favour that which I originally suggested, namely, pressing its breastbone firmly in; and Mr. J. Wilkinson, of Market Harborough, quotes a similar method from Professor Elliott Coues' "Field and General Ornithology":—"Squeeze the bird tightly across the chest, under the wings, thumb on one side, middle finger on the other, forefinger pressed in the hollow at the root of the neck between the forks of the merry thought. Press firmly; this compresses the lungs and breaks no bones."

"Larger birds," the same authority states, "can be despatched by stabbing to the heart with some slender instrument thrust in under the wing, or by piercing the brain with a knife thrust through the roof of the mouth." Another method recommended by more than one correspondent is that of driving the hard quill of a bird's flight feather into its brain from the back of the skull; while a gamekeeper avers, and perhaps truly, that the quickest way to kill a wounded bird is to crush in its skull with your teeth.

Not many sportsmen, however, would care to adopt this plan: and, to secure its advantages without the attendant unpleasantness, Colonel W. L. B. Coulson, who is well-known for his sympathy with animal life, invented a "Quick Dispatcher," in the form of a pair of nippers with spikes, which are driven into the bird's brain when the jaws of the implement are closed upon its head. Colonel Coulson also writes:—"I always when shooting (a task I now abhor) carry in my pocket a small silver knife. If a wounded bird's neck be placed at the point and this sharply run in the bird quickly dies. . . . I look upon the squeezing of the breastbone as a cruel and prolonged method. I have known it constantly to fail."

Thus we are left with a conflict of expert opinion; although the difference in results of the various methods scarcely amounts to seconds in time, provided that the operator acts with firmness. The danger is when sympathy with a wounded creature leads to mistaken gentleness of action. Before, however, leaving this subject, one would like to ask whether sportsmen cannot suggest some rule, by the working of which, when birds are being driven, spectators may be spared the painful spectacle of wounded hares left squealing and kicking and wounded birds idly fluttering on the ground until the drive is finished. Of course, sportsmen do not shoot for spectators—at least, not as a rule—but a drive is often an occasion when the ladies of the house and their friends attend to see the sport, and a wounded hare is pleasant neither to see nor to hear.

Connected—if only by contrast—the subject of "Mercy in Sport" is the story which was published in the *Standard* last year, and was repeated by Mr. Basil Tozer in the *Fortnightly Review*, to the effect that in some hunting fields a fox that has gone to earth is occasionally extracted, like a cork from a bottle, by "an instrument resembling a gigantic corkscrew," which is "screwed into the poor beast's living body." The subject has been revived again this year in a letter from a reverend correspondent, who suggests that the implement used is merely a huntsman's whip, looped round the fox's legs and then twisted tight—the action suggesting the use of a corkscrew.

In contrast with this comes a letter from a Birmingham reader, Mr. E. Woolley, who says that he can vouch for the truth of the original story. At the same time, Mr. E. Bristow, of Langley, Bucks, suggests that in some hunting countries the familiar but cruel method of drawing rabbits from their burrows with a twisted wire may be applied to the fox. If the end of a twisted wire is frayed out it can be pushed down a burrow until it comes in contact with the animal. Then, by screwing it round, the ragged ends of the wire are made to take a grip of the skin—not merely the fur—of the unlucky creature, and it can be pulled out. This also would suggest to onlookers the employment of a corkscrew, though it would not be quite so deliberately cruel.

* * *

The coincidences which occur in real life are often too curious for fiction, and sometimes would raise an incredulous smile if stated in evidence in a court of law. The other day, for instance, we published in the "Week's Wild Life" a picture of a brown owl, whose scientific name is *Syrnium aluco*, or, as it is often written for brevity, "S. aluco." Imagine then the confidence with which, when I found that the picture had been made ready for publication with "S. Aluco" as the name of the photographer, I struck this out. Indeed, had it been published, every ornithologist among our readers would have smiled at the comical idea of the brown owl photographing itself. Yet a very few days later I received a letter from the photographer, signed S. Aluco, asking why his name was omitted! I think we might go very far before coming across such a coincidence as that the first of a batch of photographs contributed by an artist named S. Aluco should be that of a bird named *S. aluco*.

* * *

I am glad to have been able at last so to rearrange the pages of THE COUNTRY-SIDE that the descriptive reading matter of the "Week's Wild Life" now faces that illustrated page, and readers will be relieved of the trouble of turning the pages backwards and forwards in taking the pictures and letterpress together. It may seem a small matter to arrange; but the "make-up" of an illustrated paper with several fixed headings and a limited number of pages is a difficult subject to play with. That the change will be popular with our readers I know from the number of letters received asking that it might be made.

* * *

We have had some interesting differences of opinion as to whether "English" or "Latin"—popular or scientific—names of natural objects should be used in THE COUNTRY-SIDE. That both should be used where possible, one following the other in brackets, we were all agreed; but which was to be the one relegated to brackets and which, when only one name could be conveniently used, the one to appear in solitary dignity? I think that the opinion of our readers was decisively expressed in favour of the English or popular name, with the Latin or scientific name added in brackets wherever convenient. But here arises a more thorny question; which of the numerous Latin or scientific names that different authorities employ are we to adopt?

In our "Notes, Queries and Correspondence" appears a brief note signed "T. H." protesting against our use of such names as "*Perdix perdix*" for partridge, "*Vanellus vanellus*" for lapwing, and so on; and probably there is no reader who does not feel that these duplicated titles are rather absurd. It seems, moreover, to be a waste of language to call a bird *Perdix perdix*, "Partridge-partridge," when the older name of *Perdix cinerea* expresses so much more "the ash-grey partridge." So with the peewit, the old name *Vanellus cristatus*, "Lapwing with a crest," is infinitely better than "Lapwing-lapwing."

* * *

Still, there is a great deal to be said for this system of marking the typical species of each genus with the name of the genus. It distinguishes the chief of each little clan, as it were, in the same way that a Scotsman is named "of that ilk," and an Irishman is "the 'O' So-and-so." But considerations such as these would not prevail with many of us to the extent of upsetting all previous systems of nomenclature, if they had not previously prevailed with the authorities of the British Natural History Museum. Under the auspices of Dr. Bowdler Sharpe, the national collection of birds has been named on this plan; and it seems to me better for us to put aside our own feelings in the matter and follow the system which has been adopted for the national collection. It may, as "T. H." says elsewhere, have "covered British nomenclature with derision"; but, so long as it is British nomenclature, should we not use it and make the best of an indifferent job?

E. Kay Robinson.

Robin.

Bare branches blacken,
Tossing in the gale:
There's rust on the bracken,
And ruin in the vale.
In the drear November,
Dank and dark and cold,
Who shall now remember
The melodies of old?
Robin dear, O, Robin dear,
Minstrel of the faded year,
Piping sweet, piping clear,
Though autumn winds be sighing!

Fled is each nestling,
Every nest forlorn:
The winds, in their wrestling,
The trembling woods have torn:
Gardens are forsaken,
Flowerets dreaming lie,
In sleep that none shall waken—
Who sings their lullaby?
Robin dear, O, Robin dear,
Minstrel of the faded year,
Piping sweet, piping clear,
Though yellow leaves be flying!

Brave little singer,
Solace bright you bring!
The echoes yet linger
Of forgotten spring:
When the vapours darken,
When the dim lights wane,
Still you bid us hearken
And take good heart again—
Robin dear, O, Robin dear,
Minstrel of the faded year,
Piping sweet, piping clear,
Though cloudy days be dying!

MAY BYRON.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

All applications should be addressed to Miss G. B. Norrey, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published.

Special Advantage for Members.—Messrs. Dolland and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches; 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an Association in which no fees are charged for membership. Amount previously acknowledged, £12 18s. 1d. Since received: 2s., W. O. Sheppard, Wood Green; 5s., Mr. George S. Watson, Sheffield; 2s., E. C. Beaver, Holt. Total, £13 7s. 1d.

Motto Wanted.—Mr. C. Nicholson, of Chingford, Essex, makes the good suggestion that the B.E.N.A. ought to have a motto and that suggestions should be invited from members. Will those who have any ideas on the subject communicate them?

Affiliated Society.—Dear Sir,—At a well-attended meeting of members of the Erdington and District Natural History Society held on Friday, November 9th, it was proposed by the writer, and seconded by Mr. R. Millward, "That this society become affiliated to the British Empire Naturalists' Association (B.E.N.A.)." This proposal was unanimously carried by those present, and it was desired that I should write to you and let you know the wish of the members on this subject. The membership of this society numbers at present forty, and I have very great pleasure in sending you enclosed a copy of our present programme. I may say that my colleague, Mr. Scott, spoke for this affiliation, as also did the lecturer for the evening, Mr. D. T. Harris (vice-president), both these gentlemen, especially the latter, speaking very nicely indeed about yourself and your valuable little paper, THE COUNTRY-SIDE, and advising all our members who do not already do so to take your paper in weekly, Mr. Harris saying it is indeed a splendid pennyworth. We shall be pleased to see any members of the B.E.N.A. at our meetings or give them any particulars re our society on hearing from them. I must thank you very much indeed for putting the notice of our society in THE COUNTRY-SIDE of September 22nd, as through that notice we got one or two members whom otherwise we should not have heard from.—I remain, dear Sir, yours faithfully, W. F. WIEMANN (hon. secretary).

[I shall be glad to hear that other B.E.N.A. members in the Erdington district have joined this society. The hon. secretaries are Mr. W. F. Wiemann, 22, Orchard Road, and Mr. W. Scott, 11, Mason Road, Erdington.—E. K. R.]

Collections on View.—Mr. E. R. Paton, Brookdale, Grossendale, Liverpool, will be pleased to show his collections of birds and eggs to any member at any time when he is at home.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Stone in a Tree.—Sir,—I beg to enclose a photograph which I shall be pleased for you to use if suitable. The tree had grown round and enclosed the stone completely, but



Photo.] Stone in a Tree. [A. Du n.

The tree grew round the stone and enclosed it completely, but when the tree was cut down the stone was unfortunately broken.

unfortunately when the men cut the tree down one side of the stone was broken off. The tree was growing in the parish of Ozleworth, Glos.—Yours, etc., ALBERT DURN.

Introduction of Rare Plants, etc.—Sir,—I think with you that the protest of "Secretary" is a mistaken one and easily remedied. I have introduced a number of species of Mollusca from various parts of the country in likely localities around Preston and on the coast, and only this week turned out many hundreds of ova of *Helix cantiana* from parents collected at Bletchley in April, but have always made a point of recording the fact in the "Journal of Conchology," and my earlier attempts were also mentioned in the "Disposal of Shells." This obviates any confusion in local lists. I don't know of any journal exclusively devoted to botany to which such records could be sent. These could be sent, as you suggest, to the local scientific societies.—Yours, etc., W. H. HEATHCOTE, secretary, Preston Scientific Society, Preston.

Noises of Butterflies and Moths.—Sir,—I have not heard the peacock butterfly or the tiger moth; but the "painted lady," if missed by the first stroke of the net will often return again with a very distinct click, click, apparently of the wings. Also when chasing each other for pairing purposes, they make the same noise. A more interesting case, however, occurred to me some years ago in early September, when I went to visit a son at Ponders End. At night we went across the marshes and sugared the trees. While crossing the meadow-grass we heard a distinct sharp sound as if two knife edges had been brought together. I at once turned the lantern towards the sound and my son, carrying the net, at once found a use for it in taking a moth flying low over the grass. It was a feathered Gothic (*popularis*) and the same thing happened again and again, all the moths taken being males. When no more could be seen on the wing, the noise still continuing made us look

on the grass for a newly-emerged one, and there it was with its wings still over its back. This seemed to prove that the sound is made by the moth independently of any act of flight.—Yours, etc., J. T. FOUNTAIN, Birmingham.

Sir,—The humming-bird-moth makes a humming sound like a bee, which you can hear from some distance.—Yours, etc., CONSTANCE F. HOLDEN.

Nests of Sparrow-hawks.—Sir,—In reply to "Mid Nithsdale," I have seen, during the last 20 years, an average of 10 nests of sparrow-hawks each year, but have never seen them take any other nest except their own. I have seen them repair their old nests. I know of one fir tree which has had a nest with eggs for 6 years in succession, although the gamekeeper has shot the old birds every year.—Yours, etc., Wm. MORRIS, Sedberg, Yorks.

Sir,—Referring to the letter of "Mid-Nithsdale," Mr. O. G. Pike (a reliable observer) in his book "In Birdland" (page 125) says, concerning the sparrow-hawk, "The nest, which is placed close to the trunk of a tree, is generally actually built by the hawks, but sometimes the deserted nest of a crow or a wood pigeon is said to be appropriated by them."

When Mr. R. Kearton was photographing a sparrow-hawk's nest he says the hen "commenced to fetch small dead birch twigs and place them in position on the front edge of the nest, and I photographed her with one in her bill, which, I think, goes some way towards proving that the species is capable of building its own nest, instead of adapting the old home of a crow, squirrel, magpie, or wood-pigeon, as some naturalists have contended." (From "Wild Nature's Ways," p. 158.)

W. Percival Westell states the nest "is placed in trees and thorn bushes, and the bird occasionally occupies the deserted nest of a crow; it also builds on rocks and sea cliffs."

I think the correct conclusion is that the sparrow-hawk generally builds its own nest, but sometimes utilizes the deserted nest of a bird of somewhat similar size.—Yours, etc., ALBERT E. UNWIN.

Scientific Names of Birds.—Sir,—As a matter of general interest, I should like to know what advantage, or commonsense, there is in the scientific names of birds which you have adopted. In the "Week's Wild Life" in recent weeks the following have appeared:—

Perdix perdix (partridge-partridge), *Merula merula* (blackbird-blackbird), *Vanellus vanellus* (lapwing-lapwing), *Turtur turtur* (turtle dove-turtle dove), *Pica pica* (magpie-magpie), *Regulus regulus* (goldcrest-goldcrest). I would suggest that you should take a vote of your readers whether the nomenclature of Yarrell (which everybody knows), or Linnaeus, or any reliable authority — or, better still, a discriminating selection—should be followed, or whether THE COUNTRY-SIDE should go on slavishly following the pigmy Yarrells who have covered British ornithological nomenclature with derision.—Yours, etc., T. H. [My personal sympathies are entirely with "T. H.," but see "Country-Side Notes" in this issue.—E. K. R.]

A Modern Fable on an Ancient Theme.—Sir,—Last June I was in a garden at . . . where I saw some very strong and healthy looking peas. I admired them, and my friend told me something very wonderful about them. The peas had been given to her by a friend, who was present at the British Museum when the mummy-case was unpacked, in which they were found. This case was about 4,000 years old, that is, from about the time of Moses. She planted these seeds, not in the open ground, but in a saucer of water. After some time they sprouted! When a fair size, they were put into the ground, and grew very tall that same year and bore a great number of peas. The next year these plants appeared again and have done so ever since. This year my friend found out that the peas were edible. She tried some. They were quite nice but they were field-peas and not so fine as garden-peas.—Yours, etc., —

[For reasons that will be obvious from the following we have suppressed our correspondent's name and address, as well as the locality where these peas of fable grow. But for the circumstantial character of the story and the writer's evident good faith, I, knowing it to be a fable, would have consigned it to the waste-paper basket. Instead I referred it to an authority at the British Museum whence comes the following reply:—"The story is ridiculous. To begin with, no seeds taken from mummy cases have ever germinated, though they have been said to do so. In the second, the story that such peas were obtained from the British Museum is preposterous. There are very stringent rules indeed as to the disposal of specimens that have once entered the Museum, which no official would care to break. The whole story is so silly that it would hardly be worth noticing in the pages of THE COUNTRY-SIDE." I think, however, that to correct a spreading error is never labour thrown away. ED.]

A Unique Foster Parent.—Sir,—In COUNTRY-SIDE dated September 8th is an account by Mr. Claude St. John of my macaw having adopted a kitten. I have pleasure in submitting a photograph of the unique couple, trusting you will find it suitable for reproduction. The macaw, it will be remembered, spirited the kitten away from its mother to a make-believe nest under a couch and showed such a ferocious attitude that the mother was awed into submission.—Yours, etc., A CORRESPONDENT.



Photo.]

A Curious Foster Parent.

This Macaw, believed to be a male, took the kitten from its mother and refused to give it up again.

Strange Death of Greenfinches.—Sir,—Do you think it possible that the fate of the greenfinches which have recently been found with their heads firmly fixed under their wings may have been due to their exertion in reaching their oil glands? I have often noticed birds go through all sorts of peculiar contortions in getting to this arrangement.—Yours, etc., L. M. CURTIS.

Twins in 1906.—Sir,—In your "Country-Side Notes" you recently noted the number of double flowers and eggs and wonder if this "peculiarity" of 1906 extends to humanity. As far as this district is concerned it certainly does. My wife "led off" with a twin in March last and since then, within a radius of one mile, there have been six others, and that in a country district none too thickly populated. How many more there have been that I have not heard of I do not know, but the above number in about six months is undoubtedly rather exceptional. I only hope your surmise, *re* deformity for 1905, was not so accurate.—Yours, etc., V. J. HATFIELD, Upper Parkstone, Dorset.

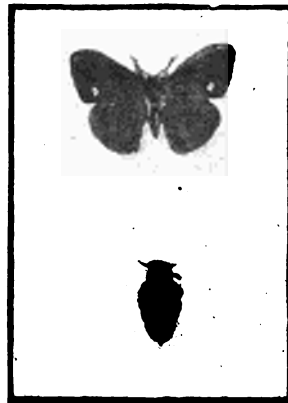
Ants' Cocoons.—Sir,—What a pleasant relief it is to see these objects called by their proper name on page 314, instead of by the usual absurd one of "ants' eggs!" I beg to suggest that the time has now arrived when educated people should use the correct name when speaking and writing of these little pale-coloured oval things so much used for feeding poultry and other birds. The egg of the ant is so small as to be scarcely visible to the naked eye; it is the cocoon of the ant which is so well known. The correct name is not difficult to learn, and its constant use in a popular and instructive paper like THE COUNTRY-SIDE is very desirable on the score of accuracy, if for no other reason, and in time it would get into general use.—Yours, etc., C. NICHOLSON, Chingford.

The Helleborine—A Question for Botanists.—Sir,—May I draw the attention of botanists to my photograph of helleborines which was reproduced in the Week's Wild Life in No. 75. I think it shows the distinguishing character of *Ep. violacea* as compared with *latifolia*. The latter (the left-hand figure) always having nearly orbicular fruit (and at all parts of stem), and *media* (in this case *violacea?* var.) (the right) pear-shaped fruit. I have found no difference between *violacea* and *media*, in fact have almost certainly identified plants as in different years producing either form of leaf, but some oval fruit. Hoping to draw the attention of botanists to determine if it is a discriminating point, the question of *media* as a separate species being, I believe, undetermined.—Yours, etc., GERALD C. HODGSON, Stoneleigh, Red Hill.

[Until—if ever—botanists are agreed as to whether the sub-species or varieties of the helleborine, *Epipactis latifolia* (*media*, *ovalis*, *purpurata*, *violacea*, and so on), deserve to be called species, it is better for us to continue to keep them all under one name: though it will be interesting to observe whether the greenish-flowered type always produces rounded seed-vessels and the purplish-flowered variety pea-shaped ones. Ed.]

Scent Fans in Insect Courtship.—Sir,—The males of certain moths have an expansible tuft or fan of hair commonly stained with an orange yellow secretion which may confer the delight of a scented pocket handkerchief to their partners. Many *Noctuina* have these fans at the base of the abdomen, the swift moths have them on the hind legs, the red underwing genus has them on the hind or fore, some of the *Pyralidina* have them on the fore; and certain of the *Geometrina* have them at the base of the fore wing. But I was much surprised to see them on the hind tibiae of the little *Tortrix P. corticana*, figured in Stainton's Manual, p. 238, and as other lichen mottled members of the family have thick hind legs I conclude that they have them also.—Yours, etc., A. H. SWINTON, Tutnes, Devon.

A Common London Moth.—Everyone who observes wild life in London must have noticed at times a bright reddish-brown moth darting about in the daylight near the parks and squares. This is the male vapourer moth, shown in the upper figure of the lowest of these three pictures. His rich auburn upper wings are conspicuously marked by white eye spots; but his wife is a homely thing indeed. She is well represented in the lowest figure—



Photrs]

[A. E. Tonge.

Life History of the Vapourer Moth.

Above are the caterpillars, and below the moths, male and wingless female. In the centre is the female's old cocoon, covered with eggs which she has laid.

an obese, greyish egg-bag. Having no wings, she cannot fly; and therefore spends her entire life upon the cocoon from which she emerged, covering it with eggs. A slightly enlarged figure of the cocoon and eggs occupies the centre of the illustration; and many readers will doubtless recognise the familiar object as one which they have often seen in sheltered nooks of tree trunks or palings. From these multitudinous eggs emerge hairy caterpillars which, as they grow, are seen to be beautifully decorated with coloured spots and tufts

of various hues. Their beauty does not, however, prevent them from being a great nuisance, when, as this year, they so swarmed as to fall in showers from the trees upon the seats in Hyde Park and other summer resorts in London.

Raven Lore.—Sir,—I was much interested by Mr. Walpole Bond's article in THE COUNTRY-SIDE, but it is not always the case that at least three miles separate two ravens' eyries, as both in 1905 and 1906 I knew a certain part of the coast of Wales which had five inhabited eyries within a distance of about ten miles.—Yours, etc., E. F. A. HAY, Oxford.

Sneezing in the Light.—Sir,—We have a large cockatoo that always gives a little sneeze when any sudden light of any kind is flashed on her eye, even a looking-glass will have the same effect. Have any other readers noticed this?—Yours, etc., (Miss) L. WILLS. [I think I have noticed that pigeons sneeze when a light is brought into the pigeon-house. Many children also can make themselves sneeze by looking at the sun.—E. K. R.]

Brer Rabbit Lying Low.—Sir,—*Re* wild rabbits. Some three years ago my little boy and I were walking on the burrows at Croyde in North Devon when on our right we saw a rabbit feeding. I shouted, and at the same time began to run towards it. To my surprise it crouched and lay quite still. After smoothing it we walked away. Was it fright?—Yours, etc., (Rev.) J. Winsor, The Manse, Calstock, Cornwall. [Whenever a rabbit thinks that, by the sudden appearance of an enemy, it is hopelessly cut off from its burrow, it crouches flat upon the ground, hoping to be unobserved. You can then always approach within a yard or two, before it will bolt. To stroke a crouching rabbit, however, is another matter.—E. K. R.]

Abnormal Flower Growths.—Sir,—Observing that the phenomenon of abnormal shaped terminal flowers in the common foxglove, *Digitalis*, is still eliciting much attention in the columns of your journal, I have anticipated that it may interest those of your readers to whom the subject is specially attractive, to know that I observed a *Penstemon*, belonging to the same natural order of the Scrophulariaceæ, growing in the picturesque gardens of La Seigneurie, Sark, a few weeks since, in which a precisely identical modification of the terminal flower was developed. It was erect, campanulate and apparently composed of the floral elements that normally go to the making up of two, if not three, of the ordinary pendulous flowers. I regret I did not bethink me at the time of precisely determining the number of stamens, but they were numerous. I at the time satisfied myself that there were no campanulas or other bell-shaped flowers growing in its near vicinity whose contour the *penstemon* might have mimicked. This so-to-say redundancy of growth that manifests itself in the production of abnormal, but evidently multiple, coalescing normal blossoms, is by no means confined to the Scrophulariaceæ. A very interesting one was much in evidence in the gay beds and borders of the Zoological Society's Gardens during the past season, in the gold and crimson tresses of *Celosia plumosa*, normally composed of innumerable minute separate florets, in which, at the termination of the flower spikes, many of these florets had coalesced *en masse* in the same plane, producing compressed floral fascicles resembling in miniature the fan-shaped flower aggregations of its near ally, the common cockscomb. In the animal world a closely paralleled development as compared with the abnormally enlarged flowers of *Digitalis* and *Penstemon* may be observed of the flower-like anthozoa or coral polyps, in whose calcareous compound corolla, taking for example such genera as *Faria* or *Goniastrea*, it is by no means uncommon to find callicles of abnormal dimensions, representing the coalesced elements of two or more adjacent normal ones, interpolated among the latter.—W. SAVILLE-KENT, F.L.I., Milford-on-Sea.

Profitable Poultry Culture.

By "CHANTICLEER."

White Fowls Profitable.

It has long been my opinion that white varieties of poultry are closely allied to profit, inasmuch as they are the best layers. We have excellent instances of this in such breeds as the White Leghorn, Wyandotte, or Orpingtons, which are classed amongst our most prolific fowls; whilst even Cochins and Dorking breeders contend that the whites far excel other varieties.

Here I would mention that there exists in animals and birds two kinds of white—one a weak white due to albinism, or the absence of pigmentation; and a strong white on dark ground, the strongest of all colours, resulting from the union of all other colours. When the white is due to albinism there is lack of strength, but with poultry the white is generally due to "sports," especially from black fowls; and when we consider that all the beautiful varieties and breeds of domestic fowls have one common origin, we need not wonder that our pure breeds throw so many what we call "wasters" or sports. Thus a Black Minorca will throw a white fowl, also the Black Orpington or Langshan, which will account for these breeds showing white flight feathers.

The white flight and tails are extremely difficult to eradicate, and are also seen in buff varieties, which proves the strength of the colour; and this undoubtedly has some bearing on the white fowls' egg-producing properties, which is now freely admitted by lovers of poultry; whilst they are also found to be generally hardy, consequently suitable to any conditions.

The Secret of Healthy Fowls.

It will be found that the secret of keeping fowls healthy during the cold, wet, wintry months will be found in properly feeding them every morning with a good supply of properly hotted food, which should be thrown down to them if on grass runs, or if the birds are in confinement it should be given in troughs.

When these precautions are taken there is not the waste of food as if it is thrown down indiscriminately, and so get dirty and useless before being eaten up.

As I have advised before, all scraps from the house should be mixed well with fowls' food, but the staple food will be found in Spratt's Patent Poultry Meal, which is now recognised as a marvellous conditioner for laying poultry, and by pouring boiling water upon it and mixing with a little sharps will make an excellent diet for all conditions of fowls, especially those expected to fill the egg-basket in mid-winter.

The month of November is a critical period of the year, and it behoves poultry-keepers to be watchful. Early hatched pullets often begin to shed their feathers and stop laying until the early spring.

A little poultry spice may be given in the hot morning food, which renews the strength and energy of the birds and helps them in every way. Spratt's Poultry Spice is unequalled in this respect, and may be given at least four times weekly.

Of course, it is wise to keep all hens used in the breeding-pen back—by moving them about as much as possible—as their eggs will be required in January; whilst the germ will be thus stronger, and incubation more successful, especially if only three hens or pullets are allowed to the male bird until springtime arrives, when half a dozen may be allowed.

Egg Production.

During the next few months all poultry-keepers should exercise vigilance in respect to their laying hens or pullets, so that when they mate up their breeding-pens early next year they may select sittings of eggs from the birds that have laid not only the greatest number of eggs throughout the year, but also when eggs are mostly in demand.

Even the mediocre hen, whose laying record is poor compensation for her keep, will manage to reward her owner with a goodly number of eggs in the spring or early summer; but it is our winter layers, whose eggs are in demand at five and six a shilling when snow and frost is on the ground, that makes the poultry-keeper rejoice.

If we are to perpetuate breeds of prolific or everlasting layers, we must do so in a methodical manner; and there is no better plan than to watch the laying powers of our hens, and use only eggs for hatching purposes from birds whose record will bear investigation.

He must, indeed, be a poor poultry-keeper who has not, amongst other idiosyncrasies of fowl life, observed some birds who can be



Photo]

A Photographic Mystery.

truthfully described as first-class layers; and if such hens are used in the breeding-pen the owner will assuredly benefit himself by the progeny raised, and also generally improve aviculture.

In large poultry farms trap-nests are extensively used, each hen having a numbered ring on the leg, and by placing "bolting" wires on the nest she cannot escape after laying her egg until her number has been recorded.

It will be found that the small, active, and nervous breeds, and hens which have gone through their moult quickly and at the proper season of the year (August and September), have not only the strongest and most vigorous constitutions, but will fill the egg-basket during the winter if afforded protection. I may here state that long, deep-bodied hens or pullets should be chosen in preference to those with a short body. The outline of a good laying fowl, irrespective of a heavy comb (which usually denotes egg-production), is usually long-bodied, deep-chested, with a long and quite straight underline, in contradistinction to those birds whose underline more resembles a half-circle.

Amateur Photography.

AN INTERESTING PROBLEM.

THE photograph reproduced here is a contact print from a negative of a globe containing numerous flowers, in the middle of which was a large white tulip.

After completing the process of developing and fixing, I placed it with one or two other negatives in a bath to wash. But I quite forgot to take the print out of the water till the next morning. It had then been washing about thirteen hours.

All the flowers on the negative had vanished except the tulip. The film was embossed all over with the pattern shown, and the only flower which remained at all visible was the tulip, which was also embossed with the same pattern but on a smaller scale.

The manner in which the pattern is formed is obvious, but I think that two things are very surprising. Why was it that only the tulip remained; and how is it that the pattern is uniform in design all over the film. Perhaps some of your photographic readers can give some light upon this.

EDWARD ASH.

Our Photo.

Competition.

Photographs intended for the November competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed, "Camera Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in. Stamps should be enclosed if the return of the photographs is desired in case of rejection.

"The Bee-Master of Warrilow," by Tickner Edwards, published by the Pall Mall Press at 2s. net., is a little book which is so daintily written round the theme of bee-keeping that it seems to have the very savour of the honey-laden flowers and to take us straight into the old-fashioned garden where the bee-master lives and works. The writer recognises all the picturesque associations which linger round the old straw hive, but acknowledges at the same time that profit, humanity and common-sense are all on the side of new methods. Between the "new class of bee-keeper—people who have taken to the calling as they would to any other lucrative business" and "the inveterate, old-time skeppist—who obstinately shuts his eyes to all that is good and true in modern bee-science," our author has discovered that "luckily for English bee-keeping, there is a third class upon which the hopes of all who love the ancient ways and days, and yet recognise the absorbing interest and value of modern research in apiarian science, may legitimately rely." Therefore his book, well-written on a good theme, is excellent to read.

"DAILY MAIL"
The Naturalist's Daily Newspaper.

Leaves and Memories.

THE leaves are falling fast in the valley of the Rhone, and as one looks at them one's mind harps back to English parks and English avenues. One spot in particular I call to mind, and there, too, the fingers of mezzotinting autumn are at work, and, like random papilios, the leaves of oak and ash and breech and lime are fluttering earthwards.

In the days of our childhood, leaf-life in its many forms, was always full of fascination. When we were young things we spent very pleasurable hours in the great heaps that collected, wind-gathered, on the lawn in the angle of the old ivied wall. There we used to dive and romp, playing the old, old game of the Babes in the Wood. In those days, indeed, we held fast to many golden fantasies that somehow have wilted beneath the light of experience. Every robin was potentially from elfland, and every rabbit, as likely as not, from the realms of Lewis Carroll. Slave-hunting (that was when Uucle Tom's Cabin held us in thrall) was another favourite game. One would hide, and the other, after a stipulated interval, would loose the savage bloodhound on the fugitive's track. Said ferocious canine was an old yellow collie—and how the old dog did enjoy the sport! Ranging like a setter, he would sniff at every leaf heap—for the game was at its zenith at the end of October. When at length his olfactory nerves revealed runaway, he would bound high in the air and with short sharp barks descend upon the prostrate form of his quarry, "snuzzling," as we called it, in his attempts to lick the face of the captive. Never was there such a children's dog! He learnt in time to play the game according to rules. At our "Don't look, Laddie," he would trot away round the corner and lie with his head between his paws while we hid cunningly. Then at a whistle he would come in chase, barking with excitement. Sometimes he would find his quest in the laurel thicket, sometimes—this at hay harvest—in the heart of a rick, but generally among the leaf-heaps in the proper season. R.I.P.! He died full of years—and to the last was the same sunny old comrade that we romped with in the golden days. I think that when he died he took with him many of our illusions—but even now when I think of the English autumn he comes back, and brings with him pleasant memories.

Leaves! Leaves! There are some who love the smell of incense wafted down dim cathedral isles. But far more grateful to me is the fragrance that fills one's nostrils where they burn dead heaps of leaves in that great fane of which the ceiling is the sky. One gets a breath of it now and again when one sits by a wood fire, and I can lie back in my chair and see the blue smoke wreathing skyward as the old gardener piles on yet another barrowload.

GILBERT OWEN.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

THE greatest Zoo attraction just now is the newly-arrived baby hippopotamus, located in the den which used to be occupied by the tapirs, who have had to make way for their superior. Although it is not larger than a fair-sized pig, and so is quite infantile, this is not a captive-bred specimen, but a wild African one from Nigeria. Its head is of what might be called a reasonable shape—not having yet developed the monstrous muzzle of the old hippo.—and its underparts are of a flesh colour, so that it has a very distinct appearance, and is well worth a visit.

In nature, the baby hippopotamus rides on its mother's back when in the water; no doubt as a protection against the crocodile, the only enemy it would have to fear.

In the Western Aviary will be found a speci-

men of the Kagu of New Caledonia (*Rhinocheilus jubatus*), a rare and remarkable bird, which has not been in the collection for a good many years past, though it has lived and even laid there.

The Kagu puts one in mind of some of the animals in "Alice in Wonderland"; it is a grey bird of a curiously dumpy shape, with a long drooping crest which it can erect on occasions, when it has a decidedly lunatic appearance; in size, it about equals an ordinary hen.

It is a nocturnal bird, feeding on worms, snails, etc., and has no near relatives, being placed in a family of its own, which appears to be allied to that containing the beautiful sun-bitterns (*Eurypyga*), of which a specimen is to be seen in the same aviary. Neither of these groups are at all closely allied to the real herons and bitterns, but come somewhere near the cranes and rails.



Photo.]

[W. S. Berridge, F.Z.S.]

The Kagu at the Zoo.

This is a very rare and remarkable bird.

The Week's Wild Life in Pictures.

THE redwing (1) is the very handsome little thrush which becomes so very tame through hunger and weakness when the winter is severe. You can easily distinguish it then by its bright stripe over the eye and the ruddy patch upon its flank. In mild weather, however, it is a shy bird, and you distinguish it from the common thrush by its slightly smaller size, swifter flight, and habit of keeping in flocks or companies, each bird, as it takes to flight, on your approach, uttering a querulous monosyllable. The redwing does not nest in Britain, but vast numbers come over from Norway, etc., to winter here.

2. Unlike other moths which appear in winter, the female December moth—represented in the picture—is not wingless or incapable of flight. On the contrary, her wings are more ample than those of the male. There must be some special and important advantage to the moth from emerging in November or December; because in years when those months are not suitable, it will remain over in the chrysalis stage until the same months of the next year, sometimes even for three or four years in succession. The colour of the moth is purplish brown with yellowish lines. The male is smaller, with feathered feelers.

3. When we see such a mass of living matter as is depicted in the accompanying photograph growing out of a lifeless stock we are reminded that "out of death cometh

life," and that Nature uses up all matter to the best advantage. Its English name, the striped stump-flap, describes, firstly, its ordinary markings in parallel lines; secondly, its habit of growing upon old stumps; and, thirdly, its shape like a flap attached to the wood. It varies in size from two inches to nearly a foot across. It is velvety to the touch, and may be pale unicolorous, but usually zoned in various shades of brown, grey, or yellow, and is extremely variable in hue; the underside is white or very pale yellow. It is not known to have any edible qualities—indeed, is reckoned by some authors as decidedly poisonous. Its taste is nauseous, and its smell unpleasant. It is one of the polypose fungi, having a mass of tubes instead of gills underneath.

4. In the days of Ancient Rome, the large and unpleasant-looking caterpillars of the goat moth were, we are told, cooked as delicacies. In the country they are often cooked in winter nowadays; but by accident. These caterpillars are usually the cause of large branches being blown down, for they burrow into and destroy the wood; and so it happens that the chunks of wood into which such fallen timber is usually cut for winter fires sometimes contain unlucky caterpillars. Sometimes they are discovered when the wood is split. The caterpillars are unpleasant fleshy-looking creatures, purplish red above and yellowish below.

5. The common wild clematis has two very appropriate names; for with its wealth of creamy blossom and aromatic scent it assuredly is the "traveller's joy" when it wreathes the roadside-hedges in late summer for many a dusty mile. And now in winter, when the whitish, feathery tails which its fruits bear have become tangled and matted, like unkempt grey locks, its alternative name of "old man's beard" suits equally well.

6. The Pope or Ruff—the "e" at the end of the latter name not being essential, but merely useful to distinguish the fish from the bird called the Ruff—is almost a kind of perch, but differs from it in having its two back fins joined together. As in the perch, however, the front back fin is spiny. Pope are most likely to be taken when fishing for gudgeon. They take the same bait, and haunt the deep, slack eddies by the side of a gudgeon swim. The pope was first discovered as a British fish by Dr. Caius, the founder of Caius College, Cambridge.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

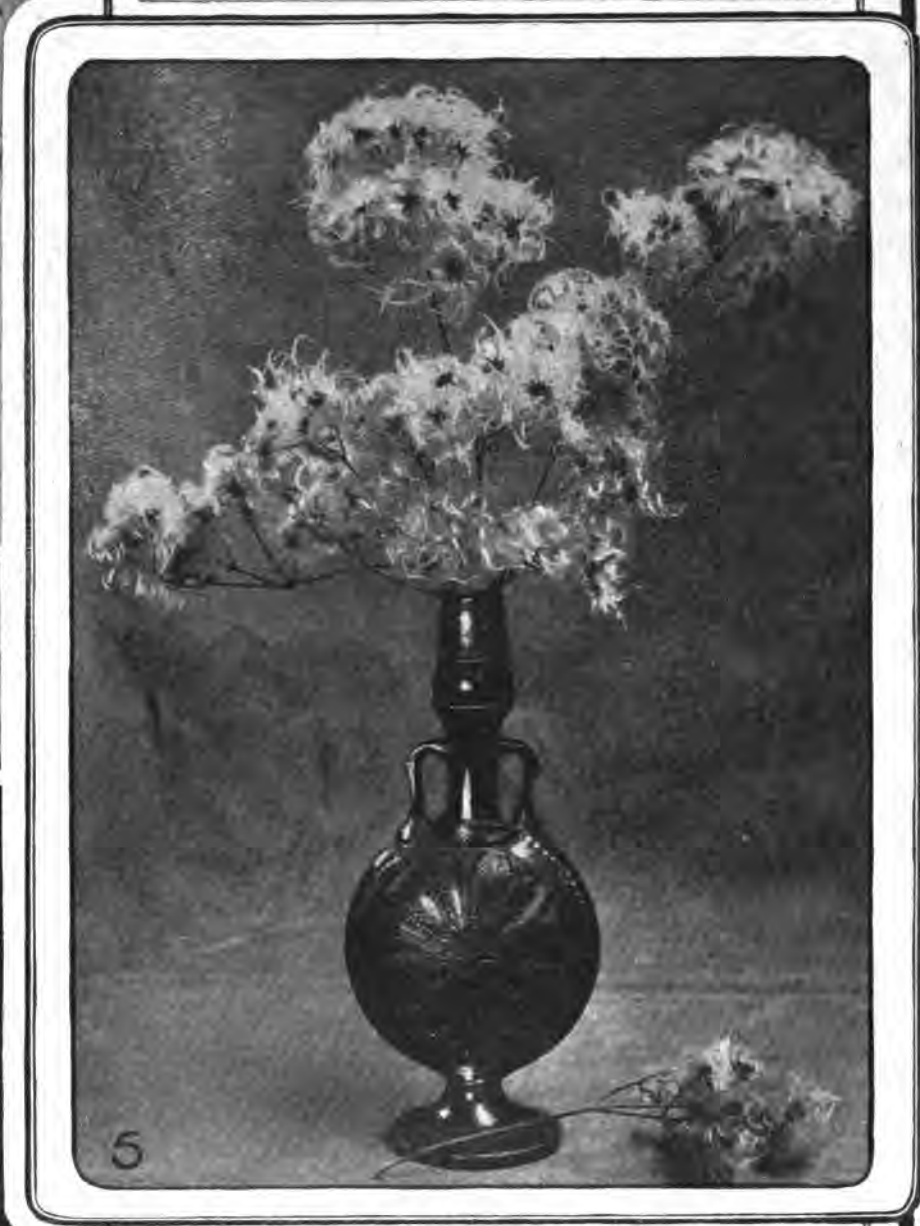
21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Mole; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 42.)



1. Redwing, *Turdus iliacus* (G. Parkin). 2. December Moth, *Paezilocampa populi* (J. P. K. R.). 3. Striped Stump-flap Fungus, *Polystictus versicolor* (E. D. Thomas). 4. Goat-moth Caterpillar, *Cossus ligniperda* (Copyright). 5. Fruit of Wild Clematis, or "Old Man's Beard," *Clematis vitalba* (P. Collins). 6. Pope or Ruffe, *Acerina cernua* (S. and W. Johnson).

The Garden.

Aloes as House Plants.

A LOES are of slow growth, but their peculiar forms and patience in neglect make them particularly suitable for houses where most plants die.

The soil *must* be poor—the ones photographed have grown chiefly in cinders, sand, charcoal, old sooty earth from a town backyard, with a few bits of well-broken small peat.

Once in two or three months the pots may be stood in a weak manure water for an hour or so.

Watering should be done in the saucer, not put on the soil. It must not be frequent; in the winter every week if in a room with a

Work for the Week.

Flowers Under Glass.

THE frost having put an end to the supply of flowers from the outside garden, attention must now be turned to the provision of flowers under glass.

The chrysanthemums fill a large place all through November and December, but after that there will be nothing unless steps are taken at once to bring on flowers by forcing. Such plants as Christmas roses, spiræas, azaleas, rhododendrons, dielytras, lily of the valley, roses, lilacs, and the polyantha daffodils should therefore be placed in a little heat, say a minimum of 50°—55° rising to 60° or more, with sunheat.

no artificial heat, except when the weather is really cold. In many gardens it is the unfortunate practice to start the fires early, say, in November, and to keep them going night and day in all weathers. This means not only waste of fuel and labour, which is bad enough, but it also means injury to the plants caused by irregular and often excessive temperatures.

Cutting down Trees.

A few weeks ago we advised the marking of trees that were no longer needed; these may now be removed. There is an art in cutting down a large tree without doing damage to the surrounding trees or risking life.

Trees with large limbs should first be lopped, that is, beginning with the lowest branch, a rope should be tied to it, and then thrown over a branch above and secured to the trunk; the branch may then be severed



[Photos.]

This plant is seven years old and has grown remarkably well in various rooms with different aspects. It has often been four or five weeks without water.

This aloe is only four years old. The markings are very faint, a few whitish spots showing on the young leaves. Its incurved "claws" leave painful scratches.

A "partridge" aloe, so called because of its beautiful markings. The spines along the edge of the leaves are regular and not prickly.

[C. B. Brown.]

Different Kinds of Aloes.

fire; every fortnight or month otherwise. In the summer every week if in a sunny position. Neglect of watering will prove better than over-doing it.

Number 1 in the illustration was a wee thing with only seven leaves when bought. It has passed through changes of aspect, been grown in a room to the south, with gas and without, in a room to the east, and is now, after the lapse of seven years, in better condition than ever, and has put out a shoot which is very sturdy; it has been for two years in a west room; has often been four or five weeks without water. The leaves when very dusty may be washed with a paint-brush; one cannot use a sponge because of the spines.

Number 2 is only about four years old and had originally only the centre stem; now it has thrown out many new ones. The marking is very faint, a few whitish spots showing on the young leaves. Its incurved "claws" leave very painful scratches.

Number 3 is called a "partridge" aloe, because of the beautiful markings on the leaves. The spines along the edge of the leaves are regular and not prickly. When watering, if all the water is not absorbed in an hour or two, empty it out and don't give any more for a week or two. A little weak tea is good instead of water, as it is also for ferns, aspidistras and geraniums. C. B. BROWN.

It is a mistake to place them in a higher temperature, too much heat, especially at the start, resulting in failure. The plants should be syringed daily in bright weather and the atmosphere about them kept constantly moist.

Some of the bulbs potted for forcing, namely, hyacinths, tulips, and lilies, may also be placed where they will get a little artificial warmth to bring them on steadily so that they will be in flower in the early part of January.

If they can be spared, a few good-sized, shapely plants of forsythia, rhododendron, deutzia, double-flowered plum and peach should be lifted from the border and planted in pots to be presently put into a greenhouse or warm frame where they will come on slowly to flower early next year.

Attention to Plant Houses.

Plant houses generally must receive careful attention during this month and next. Much harm is done by careless ventilation, worse still by no ventilation at all; the hot-water pipes, too, are a source of mischief in dull, foggy weather.

Tropical houses must, of course, be kept sufficiently warm, but in them there is often far more artificial heat than is good for the plants in dull weather.

The ordinary greenhouse, however, requires

with saw or chopper and lowered to the ground. This should be repeated until all the large limbs have been removed.

Then a rope should be fastened above the middle of the trunk itself and secured round an adjoining tree before the work of grubbing is commenced. This grubbing is making a hole in the soil close to the trunk all round, cutting through all the largest roots with a mattock. When the whole is loosened a pull at the rope will do the rest.

The bole can then be sawn off close to the base and used either to form a mound or fernery and the trunk sawn into convenient lengths. There is no more enjoyable or healthful occupation than cutting down trees in frosty weather

In the Orchard.

In the orchard the work of renovation should now be proceeded with. We have frequently condemned the worthless apple and pear trees which too often occupy space that might be filled with profitable sorts.

The axe and saw should be freely used where trees have become barren or decrepit; their branches may be cut up to form logs for the fire in winter and the trunks used for gateposts, shed building, etc.

A good bonfire should be started to burn the brush and prunings from the trees, the dis-

A Straight Talk to Rose Growers

We want to supply your Roses, because we can guarantee three things—(1) That the quality shall be absolutely tip-top. (2) That the prices shall be rock-bottom. (3) That your order, whether large or small, shall receive immediate attention.

There are reasons why we can do just what we claim here to be able to do, and the biggest reason of all is that we sell for cash, neither give nor take credit, and make no bad debts. Bad debts mean that the people who do pay have to make up for those who don't, so that cash buyers are charged unfair prices. We make no bad debts, and therefore are able to quote minimum prices for maximum value. That seems reasonable, does it not? Now for our collection of Roses, which will glorify any garden and make it a thing of beauty, a feast of colour, and a banquet of sweet scents.

THE CELEBRATED WOKING ROSES All Extra Strong.

COLLECTION NO. 1.

12 Extra strong H.P.

A. Colomb
Abel Carrière
C. Lefebvre
Capt. Hayward
Duke of Edinburgh
Duke of Teck
General Jacqueminot
Margaret Dickson
Mrs. S. Crawford
Mrs. J. Laing.
Prince Camille de Rohan
Ulrich Brunner

7/6, carriage paid.

COLLECTION No. 2.

12 Extra Strong H.T.

Bessie Brown
Caroline Testout
Capt. Christy
Gloire Lyonnaise
Gruss an Teplitz
K. A. Victoria
La France
La France, white
Mme. A. Chatenay
Mme. Jules Grolez
Mrs. W. J. Grant
Vis. Folkestone

10 9, carriage paid.

CHOICE EXTRA STRONG ROSES

At Very Low Prices.

Blush Rambler, 1/6. Crimson Rambler, 8ft. to 9ft., 1/6. Dorothy Perkins, 8ft. to 9ft. 1/6. Electra, 1/-. Helene, 1/6. Pink Rambler, 1/6. Poly's Simplex, 1/-. Paul's Carmine Pillar, 1/6. The Lion, 1/6. Mme. Jules Grolez, 1/6. Clg. Mrs. Grant, 1/6. Claire Jacquiere, 1/6. Clg. K. A. Victoria, 1/6. Clg. Papa Gontier, 1/6. Clg. Perle des Jardins, 1/6. E. V. Hermanos, 1/6. Mad A. Carrière, 1/-; Philadelphia Rambler, 1/6.

Six plants and upwards, carriage paid.

Dorothy Perkins, 4ft. to 5ft., 1/-. Crimson Rambler, 4ft. to 5ft., 1/-. Frau Karl Druschki (Special), 1/-.
Four plants and upwards, carriage paid.

SPECIAL OFFER (Just arrived).

Hyacinthus Candicans, giant bulbs, per doz., 1/6, per 100 8/-.
Spirea Japonica, large clumps, 6d. each, 3/6 per dozen.
Spirea Florabunda, large clumps, 6d. each, 3/6 per dozen.
German Iris, splendid mixed, per dozen, 1/6, per 100, 8/-.
Gladiolus, "The Bride," per dozen, 6d., per 100, 3/6.
Lily of the Valley, strong Berlin Crowns, per dozen, 9d., per 100, 5/-.
Dieltra Spectabilis, strong clumps, 6d. each, per dozen, 3/6.
Bulb orders of 10/- and upwards, carriage paid.

PLEASE TAKE SPECIAL NOTE.

In "The Country-Side" of Nov. 10th we offered Bulbs, and we shall be pleased to execute your orders on the same terms as quoted

FREDERICK CARTER & SONS,
WOKING. LTD.,
FULL ROSE OR FRUIT TREE LIST SENT
POST FREE.

Telegrams: "Seeds, Woking."
Telephone: 66 Woking.

THE GARDEN.

Work for the Week.

(Continued from Page 44.)

eased currants and gooseberries, garden refuse, especially weeds and potato-haulms.

Where poultry are kept they should be allowed to run in the orchard and kitchen garden in winter whilst there is nothing on the ground that they can injure; they pick up all kinds of insect pests and are real garden friends at such a time.

Where fruit is stored it should be carefully gone over and all that show signs of disease or decay at once burnt. This is a good time for preparing pea and bean sticks which, when trimmed and pointed, should be neatly stacked.

W. W.

Hints on Growing Roses.

As promised in our last number, we this week give the names of a few of the best garden roses to grow:—Hybrid Perpetuals—A. K. Williams, Ben Cant, Capt. Hayward, Dupuy Jarmain, Fisher Holmes, Margaret Dickson, Mrs. John Laing, Prince Arthur, and Ulrich Brunner.

Hybrid Teas—Bessie Brown, Caroline Testout, K. A. Victoria, La France, Liberty, Madam Abel Chatenay, Paper Gontier, and Viscountess Folkestone.

Teas—Mad' Lambard, Maman Cochet, Maman Cochet (white), Marie Van Houtte, Souvenir de S. A. Prince, W. A. Richardson.

Climbers strongly recommended—Aglaia, Ards Rover, Belle Lyonnaise, Climbing Mrs. W. J. Grant, Climbing Devoniensis, Crimson Rambler, Dorothy Perkins, Gloire de Dijon, Longworth Rambler, W. A. Richardson, Madam A. Carrière, and Climbing Perle de Jardins.

A few of the best pot roses to grow are: Marechal Niel, Niphotos, La France, Bessie Brown, Captain Christy, Caroline Testout, Kaiserin Augusta Victoria, Mrs. John Laing, General Jacqueminot, Frau Karl Druschki, Killarney, Francisca Kruger, Maman Cochet, Marie Van Houtte, Perle des Jardins, White Maman Cochet, The Bride, and Mrs. Edward Mawley.

S. J. C.

How to Plant Bulbs.—In putting down bulbs many people make the mistake of dotting them about in two's and three's among the other plants. There is only one way to get a really fine effect from flowering bulbs, and that is by imitating nature. Who that has seen the lovely masses of common bluebells—by no means striking or beautiful flowers if grown singly or in small clumps—can doubt that this is the way to plant bulbs? There are other reasons also for putting in your bulbs in generous patches. When they are scattered about it is not possible for the gardener—unless you disfigure your flowerbeds with numbers of conspicuous labels—to avoid digging up and injuring numbers of them. Whereas, when the bulbs occupy a large and well-defined area they can be left in peace to increase and multiply from year to year. In this way, too, they produce the finest blooms, because they are not fitted by nature to compete against the fibrous roots of fuller plants growing close to them.

Good Lenses.—Messrs. Morgan and Co., of 165, Fleet Street, E.C., have submitted to us a number of pocket lenses and magnifying glasses which appear to be quite as good as anything of the kind on the market. Besides powerful Coddington lenses of various sizes, a speciality is the Aplanatic lens constructed of three different lenses. Two of these are made of crown glass and are plano-convex. The third is of flint and is double-concave. The advantage of this arrangement of lenses is that it gives a wide view, which is quite clear to the edges.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (similar to that on page 14), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

"Birds' Surgery."—No, I do not think that there is any truth in the oft-repeated statement that partridges, woodcocks, etc., understand how to dress their wounds with down plucked from their bodies. Blood is a very sticky fluid, and the down naturally sticks to the wound whenever the birds rest, looking afterwards as if it had been placed there.—(to A. C. KENNEDY, Midlothian.)

Humming Bird Moth.—Your photo shows a humming bird moth, *Macroglossa stellatarum*. This has been peculiarly abundant in many places this autumn.—(to W. E. LITTLE, Dawlish.)

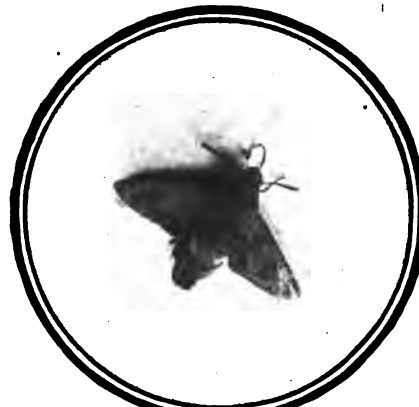


Photo.

W. E. Little.

Humming Bird Hawk Moth.

Late Butterfly.—In a year such as this has been, October 13th is not a very late date for a Painted Lady butterfly to be abroad—especially as it was probably blown over from the Continent. This butterfly, you must remember, lives through the winter.—(to R. BOWLES, Cardiff.)

The Adder as a Swimmer.—I do not suppose that the adder which was discovered swimming across Loch-Ness knew what it was attempting. Apart from the doubt whether snakes have long sight, it is obvious that a creature whose eyes are always close to the ground must have a very near horizon, and can, therefore, have no notion of the width of a large piece of water.—(to P. C., Inverness.)

"Officers Among Ants."—It is a common mistake to give ants credit for human ideas; and if naturalists in Siam have observed small ants riding upon larger ones, we may be sure that there is some more natural explanation than that the little mounted ants are "generals evidently in command."—(to A. C. KENNEDY, Ford, Midlothian.)

Butcher Birds Nesting.—The third week in August was certainly late to see young butcher birds in Norfolk still with down on their heads, but the butcher bird is always one of the latest of summer birds to reach the east coast, and suffers almost more than any other bird in having its nest "pulled" by country lads, because it is so easily found. It is probable that the young birds which you saw were the result of a third or even a fourth attempt to rear a brood.—(to J. LINDLOP, Nottingham.)

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

SPOTTED CRAKE shot during autumn at Quorn, Leics.—(G. Frisby.)

Birds on Migration.

FIELDFARES arrived near Manchester on October 18th (E. M. Murray-Morgan); on October 21st at Aldringham, Suffolk (C. H. Lay); immense numbers arrived Wells, Norfolk, November 11th (E. K. R.); great numbers arrive Sancton, Yorks., October 20th-30th (E. R. Paton.) REDPOLLS in numbers at Styal, Ches., on October 29th.—(E. M. Murray-Morgan.) SWALLOWS last seen at Brewood, Staffs., on October 19th (B. N. Wale); at Tunbridge Wells, Kent, on October 24th (J. C. Stenning); on R. Mersey, near Manchester, November 1st (E. M. Murray-Morgan); October 31st and November 4th, at Quorn, Leics. (G. Frisby); near Middlesborough, Yorks., on November 4th (S. Cook); Sandown, Isle of Wight, November 9th, with N.W. wind, November 10th, with N.N.E. wind (H. Magrath); November 11th, Bognor, Sussex (B. Wakelam); November 10th, Helston, Cornwall (J. Roscollard); large numbers at Torquay, November 7th and 8th (F. Pryce); November 11th, at Stowe, near Kidderminster, wind N.; appeared weak.—(C. A. Allen). DABCHICK picked up in the middle of the town of Luton, Beds. REDWINGS arrived at Aldringham, Suffolk, on October 27th (C. H. Lay); great numbers arrived North Norfolk, November 7th (E. K. R.) HOUSE-MARTINS: Two rested at Aldringham, Suffolk, on October 28th (C. H. Lay); November 9th and 10th at Sandown, I. of Wight (H. Magrath); November 8th, near Burton-on-Trent (A. E. Aldres). PIED WAGTAILS: About fifteen together on Hampstead Heath, November 10th.—(G. Davis.) WOODCOCK: Owing to the

"abnormal mildness of the season," the annual rush of these birds is at least a fortnight later than in other years (J. C. Walter); many arrived North Norfolk, November 10th (E. K. R.) STARLINGS, in flocks of "thousands" passing south over Sunderland, Durham, on November 4th.—(G. H. Dutton.) PEEWITS: Immense numbers arrived, North Norfolk, November 12th.—(E. K. R.)

London Notes.

SONG THRUSH singing well in the fog at



Photo |

| [A. Davis.]

Horse Chestnut in bloom at Beekenham on November 2nd.

11 a.m., November 13th, near the Round Pond in Kensington Gardens.—(Chas. Brookes.)

of the flowers which ordinarily bloom in August continued until November, when also many spring and summer flowers were blooming again. LATE FRUITS.—Strawberries, November 9th, Wilmslow, Chesh.—(W. R. S.)

HORSE CHESTNUT BLOOM.—This illustration shows a flowering spray of horse chestnut cut on November 2nd in Coper's Cope Road, Beckenham, from one of several trees covered with new leaves and flowers.—(A. Davis.)

UNUSUAL FLOWERS AND FRUITS.—In two instances in this locality the common "Jerusalem" artichoke has this year flowered freely. The Japonica has also fruited, and the fruit has ripened here. I have seen this year a castor oil plant at Windsor in full flower, and a distinct attempt at seed formation. Another very interesting thing is the fact that a large cedar of Lebanon growing in one of the public streets of Windsor has this year produced two crops of cones. The second crop did not appear until the extremely hot weather at the end of August, when quite ten times as many, compared with the numbers of the first crop, were put out. They are now perishing, while the whole of the first crop is standing perfectly. It is remarkable that in the first crop the num-

bers preponderate on the south side of the tree, while in the second crop there are many more on the north side. The people of Windsor subscribed £50, and paid it to the builder to have this tree spared—a fact which deserves to be mentioned to their credit.—(B. C., Eltham.) [The flowering and fruiting of blue gum trees has also been remarkable during this exceptional year. Several other correspondents report the flowering of the Jerusalem artichoke.—ED.]

TUFTED CENTAURY.—H. T. Mayo claims to high a distinction for the little plant *Erythæa capitata*, when he says, in No. 75, page 313, he found it "in its only British locality, Freshwater Downe, Isle of Wight." I have taken it at Cuckmere Haven, near Seaford, Sussex, and Arnold, in his "Sussex Flora," says it is also found at five other places in this county.—(E. Bray, Hailsham.)

"Pet Monkeys," by A. H. Patterson, published by L. Upcott Gill at 1s., has deservedly reached a second edition. Perhaps this shows that there are more people than one would suppose who keep pet monkeys; but assuredly the more readers the book has, the more monkey-pets there will be, because the instructions given for housing, managing and feeding the different kinds of monkeys are so bright, practical and economical that after reading a few pages one feels inclined to go straight off and buy a monkey. It is the human interest with which Mr. Patterson always manages to imbue his subject, that makes "Pet Monkeys" such excellent reading. Here is the concluding paragraph of the book:—"Lastly, I would urge upon the reader not to neglect his little friend; to give him all the room and exercise possible; to provide him with clean, sweet food; always to keep the domicile in a clean condition—in fact, in every possible way to make the little prisoner, who is entirely at his mercy, as happy as possible. The very moment interest and novelty are lost in the pet he should . . . get rid of the animal as speedily as possible." Could there be a more perfect summary of one's duty towards one's pet?

Birds' Song.

MISSAL THRUSH, on October 30th, at Quorn, Leics.—(G. Frisby.)

Increase or Decrease of Birds.

KINGFISHERS and COMMON SANDPIPERS more numerous on the River Severn, near Shrewsbury, this year.—(G. A. Johnson.)

Late Nests.

YOUNG COOTS: A brood at Quorn, Leics., about four or five weeks old, on November 3rd.—(G. Frisby.)

Marked Birds.

ROOK, fine piebald specimen on the foreshore at Southampton about November 3rd.—(B. G. Hyde.) JACKDAW with one leg, November 5th, Torquay.—(F. Price.)

Butterflies and Moths.

SMALL TORTOISE-SHELL, November 11th, Clapton.—(G. Smith.) BRIMSTONE BUTTERFLY, November 5th, near Worcester.—(N. G. Hadden.)

Plants.

LATE FLOWERS.—We have no space for the records of unusually late blooms. Briefly, one may say that most

For INFANTS, INVALIDS and the AGED.

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"Benger's Food has by its excellence established a reputation of its own."

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The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 81. Vol. 4.

DECEMBER 1, 1906.

1d. WEEKLY.

The Mystery of the Divining Rod.

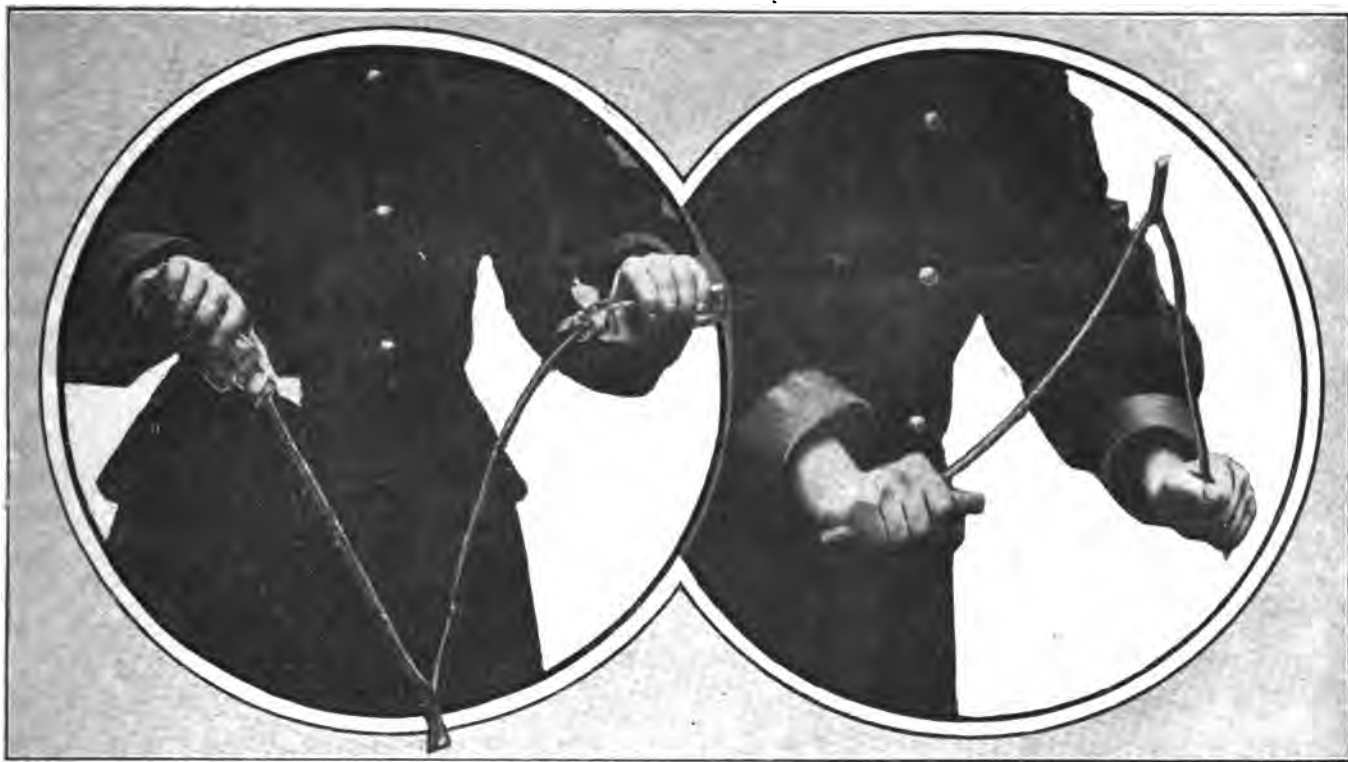
SEVERAL cases of successful water-finding having recently been recorded in the daily papers, it would be interesting to learn the opinion of the readers of THE COUNTRY-SIDE, as to whether they consider the power to lie solely within the individual, or to be in a strange way contained in some hidden virtue in the rod.

Having the pleasure one day of seeing a professional water-finder at work, I tried if a similar rod would indicate the presence of water in my hands, and to my surprise the rod was more agitated, and made

ally tested, to the surprise of old-time believers in the virtue of the hazel rod. Forked twigs from various trees, plane, laburnum, cherry, hawthorn, collected and sent me from country-side and London squares, have been tested, and answered as effectively as the hazel rod. Being of an experimental nature, I also tried rods made of iron, tin, and copper; these latter acted more satisfactorily than green twigs, as they had not the objectionable habit of suddenly snapping and flying off at an interesting moment.

the left, according (presumably) to the position of the channel which leads to the spring.

Having neither desire nor necessity to utilise this gift, if gift it be, I make it a pleasant and lively companion on country excursions. For instance, I am visiting a strange farm-house, or am staying near a common, with small tin rod in hand I stand and permit its first movement to indicate the path I shall take on starting out for my morning's walk. To those unacquainted with the rod's movements, it is



[Notes.]

Experiments in Waterfinding.

[Copyright.]

The rod with its ends placed in bottles to show that it is not the supporting hands that twist and turn but the rod itself.

The rod held in the hands. The writer found on a first experiment that the twig gyrated so violently that it finally snapped in two and flew from her grasp.

quicker movements than in the hands of the professional, gyrating in such extravagant fashion that it finally snapped in two, and flew out of my grasp.

Experiments have since been tried with engineering friends, who were more likely to pooh-pooh the power than acknowledge it, and, though not accepting the rod's movements as infallible, they reluctantly admitted "there was something in it," due, they considered, to a certain susceptibility in the individual to the presence of water which finds expression when the rod is posed in the hands, and that there is nothing whatever in the virtue of the hazel rod itself which enables it to detect a hidden spring.

The truth of that opinion I have person-

Then, finding the rod's revolutions grazed a somewhat sensitive skin, at times causing the hands to bleed freely, I had resource to putting the ends of the rod in bottles, as shown in photograph No. 2, and the rod, without coming in contact with the hands, revolved in the same way.

To convince myself and friends that the bottles do not revolve with the rod, two little bows are tied on to the neck of the bottles, so, that, seeing the bows remain stationary, we are convinced both hands and bottles are also stationary, yet all the time the rod is gyrating in most extraordinary fashion, revolving madly one minute, slowly rearing another, then remaining in an upright position, then turning to the right, or to

surprising into what interesting and devious paths it will lead you, bringing you into closer touch with the varied beauties of Nature, and introducing you to both open wells and hidden springs.

Acquaintances have tried to induce me to go abroad, and try if the rod would indicate the presence of water in mines, at present useless, owing to lack of water, and, though every inducement was put forth to make the undertaking a pleasant holiday for my companion and self, I felt I could not undertake such a task.

Being a member of the B.E.N.A., perhaps could I be present at some outing I might, with permission, give a demonstration of the rod's working.

"THE PATH-FINDER."

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, DECEMBER 1, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 2d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Irish Animal Lore.

By MAUD E. SARGENT.

THE animal superstitions of the "distressful country" are peculiar and interesting.

According to the peasantry, the cow, the sheep, the horse and the ass are all blessed beasts, because they were in the stable at Bethlehem when the Holy Child was born, and in some parts of the country we find the legend, which is also told in the North and West of England, Brittany, Germany, Switzerland and many other parts of Europe, that at midnight on Christmas eve these creatures receive the gift of human speech and kneel down in their stalls to worship the new-born King.

It is supposed that if one could see the ass kneeling thus in adoration and contrive to touch the Cross upon his back, the desire of one's heart would be gratified. Unhappily, though the animal is said to be twice blessed—because he was at Bethlehem and also because he bore the Saviour on His triumphal entry into Jerusalem—poor "Neddy" is not treated any the better for these beliefs.

A love of horses is strongly rooted in the Irish heart and there are various superstitions connected with them. Piebald horses are deemed as lucky in the Green Isle as they are in parts of England, but in many places there is rather a prejudice against white horses, because King William usually rode one of these animals—hence they are known to this day as "Protestant horses." Probably there is some connection too with the white horse of the Hanoverian dynasty, and it may be that the fanciful Celtic mind sees, too, a resemblance to "the pale horse of death," but at the same time, many of the ancient heroes and chieftains are supposed to ride upon steeds of this colour, and round Killarney it is still firmly believed, that once in seven years in the dawn of May day the famous chieftain, O'Donoghoe of the Lakes, rises from beneath the blue waters and rides across the lake, and those who see him and his white horse are supposed to be extremely fortunate.

If white horses are sometimes considered unlucky, black are more or less shunned too, because this is supposed to be the favourite colour for the fairy steeds.

There is a curious belief that horses born at Whitsuntide are sure to be most vicious and will certainly kill someone when they grow up. At this season too troops of fairy horses are supposed to come up out of the lakes and streams for the express purpose of trampling down the young crops. Their wild galloping may be heard at night at this season, and he who meets and mounts one of them is doomed to perish. Probably these legends may be traced to a time when bands of wild horses really did rove through the country, doing infinite damage to the crops.

"Horse-whisperers," persons credited with a mysterious power of taming unruly horses, are still common in the South

and West of Ireland. It is said that the charm consists in whispering the Creed in the animal's right ear on a Friday, and in his left on the following Wednesday, and this must be persisted in till he is tamed.

Cows were formerly sacred animals in Ireland, as they were in Eastern countries, indeed much of the Irish lore is purely Oriental in character. Hundreds of places in Ireland commence with the word "Bo" (a cow), and there are endless mythical stories of sacred bulls and heifers, or the three mystic cows—the white, the red, and the black—"Bo-Finn," "Bo-Ruadh," and "Bo-Dhu"—who were destined to fill the land with splendid cattle, so that the Irish should not want for these creatures while the world lasted.

These three sacred cows were supposed to have risen from the sea-shore one May Eve, when the black went South, the red went North and the most beautiful of all, the snow-white heifer, crossed the great plain of Ireland to the King's palace at Tara, and afterwards this beautiful Bo-Finn disappeared into a great cave by the sea, where she is to sleep till the true King of Ireland comes to waken her. "The Island of Inish-Bo-Finn" owes its name to this mystical cow.

The path of the Bo-finn across Ireland is marked by little monuments of rude stone, which are supposed to show where she rested each night.

The fairies, or "good people" are supposed to be most anxious to steal cattle, so the beasts are driven through the Midsummer Eve fires, which still blaze on the green hills, or are singed down the back and sides with a hot coal or a bunch of blazing rushes. Primroses are tied round their necks and tails on May Eve and May Day, as this is supposed to keep off witches, for if one of these unpleasant ladies can succeed in milking a cow on May Day, she will attract all the milk and butter of the dairy to herself for the season.

If a cow suddenly goes dry, or falls ill in any mysterious way, the witches or fairies are supposed to be at the bottom of the mischief, and a "fairy doctor," or "wise woman," is likely to be sent for to charm the animal back to health. As yet the "vet." is not looked upon as much use in such cases in remote parts of Ireland. Some old-fashioned farmers still are careful to lock up their cattle on May Eve, lest they should be bewitched on that most "eerie" of all nights.

Country folks believe that the domestic animals, particularly the dog and the cat, know all about human beings, and understand every word they say. There is a curious belief that one should never address a question to a dog, lest he should reply in human speech, when the hearer would die.

As in most parts of the world, the howling of a dog is supposed to be a death warning, and that the animals see spirits when they wail in this mournful fashion. A great many places have taken their names from "Cu" (a hound) as well as from cows.

There is another word for dog—*modradh*—and the fox is often called "Modereen ruath" (little red dog) as it is supposed to offend Master Reynard to call him by his proper Irish name of "Shinach."

It is popularly supposed that the fox will never rob the poultry yard nearest to his covert, and it is also said that those who go out and speak politely to him, being careful not to call him "fox," will be free from his depredations.

The rabbit—which, by the way, is said not to be indigenous in Ireland—is known as "the hound of the brake," while the otter is "the hound of the water." The belief in the gigantic "King-otter," who rules over the rest of his tribe, lingers in many parts of Ireland, and probably the legends of mystic "water-dogs" who come up at night out of the rivers and commit great ravages on poultry and fish, may have originally referred to these animals.

Cats are regarded as most mysterious and uncanny beasts, but as they are both "knowledgable" and revengeful, it is thought unwise to injure them, as they will keep the wrong in their minds and revenge themselves sooner or later.

Black cats, of course, are specially connected with magic, and in some parts of the island it is extremely difficult to prevent one's poorer neighbours from snipping off the tips of the ears and tails of these animals—as there is said to be "a cure in them." In Kerry the tip of a black cat's tail is carried in the pocket as a remedy, or rather an antidote, for toothache, while in Cork, till quite recently, if anyone got "St. Anthony's fire" (erysipelas) a favourite remedy was to write the patient's name round the red patches on the skin in the blood of a black cat.

Country-Side Notes.

"The hours when the mind is absorbed in beauty are the only hours when we really live."

RICHARD JEFFERIES.

I AM often asked to recommend the best kind of notebook and diary to use for nature observations; but I have never seen any that is satisfying. The value of notes depends upon their being taken on the spot. If you think that you can carry the records of a country ramble home in your head and write them down at your leisure in the evenings, you are very much mistaken. You must carry them home, already written, in your pocket; and for that purpose you must have a handy pocket notebook. But the notes hurriedly written on the spot are not, of course, intended to be your permanent record. Indeed, your pencilled scrawls on a cold day would often become unintelligible within a week. If, however, you use a good system of abbreviations, you will find that you can get a surprising amount of detailed observation into each small page of the pocket notebook; and if the book is "self-opening," i.e., if the pencil is always fixed to the page on which the next entry will be made, very little time is spent in taking the notes.

You may fill several note-books in twelve months, but your "diary" is intended to contain the records of a number of years. It should, therefore, be a volume of some size, giving two whole pages to each day of the year. One of these pages is divided under such Natural History headings as are found to be most convenient in practice; and the other, facing it, is blank. The chief uses of this blank page will be to take the overflow of notes which, as time passes, will accumulate under one or more of the heads on the opposite page; and to provide space for notes, comments and queries regarding the matter on that page as well as for little sketches connected with records which cannot be entirely expressed in words. Without this liberal supply of blank pages you would not be able to keep the diary for a couple of years without getting into difficulties somewhere or other for want of space; although you can never foresee at what particular points pressure is likely to occur.

Almost everything depends, however, upon the way in which your notes are taken in the first instance. Do not omit any detail of interest; but do not use an unnecessary word. When you first go out in the morning note the direction of the wind and the nature of the weather and enter this in the pocket-book, after the date, as briefly as possible. Thus "1.1. N.W. colder" would mean that on the first day of the first month, January, the wind was in the north-west and the weather was colder than it had been. On such a day you may hear the skylark singing and, if you have not heard this for some days, you make the entry, "S. lark" ("s" meaning "singing") and leave a space for a few words to follow, because later in the day, even on January 1st, you

may be able to enlarge the entry to "S. lark, goldcrest, wren, robin, thrush, hedge-sparrow, corn bunting," etc.

Passing the gate of some large field you may, even on January 1st, see the hares already indulging in the antics which will cause them to appear especially mad in March. In noting the fact you choose a word which will cover all similar phenomena. What they are doing is chasing each other; and this is what other love-making creatures do. So you make the entry, "Chase: hares"; and the small space which you leave after it may be filled before your ramble is finished, so that the record will read, "Chase: hares, rooks, mallards, yellowhammers"—a very interesting summary of the revival of life and love, which may sometimes be observed even on the first day of the year.

In autumn and spring a very common form of entry will commence with "mig." which means that it refers to birds upon migration. After a day's observation in October or early November, your notes might read:—"Mig.: larks (passing in flocks), peewits (immense flock), rooks, jackdaws, etc. (procession from W. to E.), woodcock (two), bramblings (numerous)," and so on. So with all the other phenomena of bird-life, each entry should commence with a brief indication of its character and space should be left for a few other entries of the same kind. Thus in spring the word "nest," followed by such entries as "great-tit's (3), hedge-sparrow's (half-built), peewit's (4)," and so on, sufficiently describe the state of the different nests, or, if finished, the number of eggs which they contained.

So in connection with wild plants you may use the abbreviation of "fl" for "flowering"; and even on January 1st you may in some years have a record: "fl: white dead nettle, primrose, heart's ease, field speedwell, daisy," etc. Brief details may be added in brackets—" (full)" signifying that the plant was vigorously blooming; while "(still)" would mean that only a lingering blossom or two remained. In the case of insects, the mere entry of the names would show that those species (chiefly, of course, butterflies and moths) had first appeared, or at any rate had been first seen abroad, on that date, while "Em." would mean that they had then emerged in captivity from chrysalids. As with the birds, plants, etc., single words added in brackets would supply such details as might be necessary to render the record complete; and a very little experience will enable every one to extend the system to all entries.

In preparing the permanent diary—which should not have fewer than 750 pages—for the reception of your records, you should date the right-hand pages from January 1st to December 31st; and before making entries on any page you should sub-divide it under the side-headings: mammals, birds, reptiles, fish, etc.; insects, etc.; wild plants; miscellaneous. If, however, you propose to devote special attention to such branches as "seaweeds,"

Warham, Norfolk.

"fossils," "fungi," etc., you will, of course, provide a separate side-heading for your hobby on each page. Similarly the botanist will give more space to "wild plants" and the entomologist to "insects," otherwise the nature student will be well advised to give to "birds" double the space which any other heading occupies. The reason of this is obvious; for not only are the birds, by their activity and their voices, always attracting attention, but they also have two marked periods of migration, dates when they begin and cease to sing, as well as the various phenomena connected with their nests and eggs.

With a diary thus arranged you will, of course, find that your entries of the first year do not come near to filling any of the spaces provided under each heading and that some, perhaps most, of the headings have no entries at all. Indeed, there will be not a few days in the year when the whole page will be left blank. All this, however, will be remedied, as time passes; because next year, when you begin again with January 1st, you will first of all be careful to put the date (07) in brackets after the existing entries before you begin to make entries for 1908; and in 1909 you will similarly mark off the "08" entries. Thus by degrees the page will be filled up; and you will be surprised each year by the way in which the entries of one year dovetail in with those of another. In no other way can you get so impressive a view of the procession of the seasons and the imperturbability of the march of nature. By the time that you have made your entries for ten years or so, you will find that you almost know with certainty what you will witness on the following day. "Our house-martins will come back this afternoon," you may say in April; or in October "The robin will begin to sing again to-day." And there is some pleasure in finding that your anticipations are correct, even if you have not expressed them to others. It is as though you had succeeded for the moment in placing your finger on the pulse of nature.

A Northern reader, Mr. G. S. McCraith, writes:—

"While reading the many delightful articles in the number of THE COUNTRY-SIDE for November 17th, I noted one or two things that set me thinking how the harmlessness and usefulness of various wild creatures could be brought home to the ordinary country, uneducated mind. The old gardener's action in regard to the "foreign looking insect"—though only a manufactured one—is, I am afraid, the way with most of the country people. Kill the thing at sight if you don't understand it"

Mr. McCraith then describes how in a farmhouse where he stayed in Perthshire the nest of a barn owl in the roof was twice rifled and the eggs smashed by the farm hands, apparently acting under the farmer's orders. He continues:—

"Now such a sentence as that in your article on owls ought to help if it could be conveyed to them. 'The barn owl . . . is the most useful bird which the land can have; and whoever kills or traps one does a large injury to the neighbourhood.' THE COUNTRY-SIDE is

not taken by farm hands or poor country people generally, though it may be by the more intelligent. My idea is: Could a paper be written, telling of the harmlessness of many creatures that are persecuted for their supposed harmfulness, and printed in *THE COUNTRY-SIDE*, the members of the B.E.N.A. afterwards to get the article inserted in the various local papers in their neighbourhood, that are taken by the country people? I know of many country districts where only one penny paper and that a local one, is taken during the week in each family, but every bit of it is read and sometimes it does for several families. In this way the information could be conveyed to the remotest districts."

* * *

One serious obstacle to the accomplishment of Mr. McCraith's purpose by this scheme would be that the unlettered rustics who kill harmless creatures under the impression that they are harmful know their victims only by local names. Suppose, for instance, that a farmhand should read and believe that a "barn owl" is a useful bird; how would that induce him to spare the bird which as "gilli-howlet," "mag-oolie," or some other curious name, village tradition bids him to kill? A case quoted by Mr. McCraith illustrates this; for he came across a group of men on a Berwickshire road stoning to death an "ask," on account of its supposed venom, the said "ask" being a harmless little common lizard. Now, it would be of no use to plead with a Berwickshire peasant to spare the "common lizard." It is the "ask" that he kills; and in Shropshire the same creature is the "harriman."

* * *

In order, therefore, to influence the minds of the villagers in remote districts, any article published in their local papers would need explanatory notes as to the local names of the creatures mentioned. These might, of course, be added by those members of the B.E.N.A. who undertook to get the article re-printed in their local papers; and they might supply useful material for the article by sending me the names of any harmless creatures which are killed through error or ignorance in their neighbourhoods. For my part, I shall be glad to do my best to carry out Mr. McCraith's suggestion; and I think that, if sufficient pains are taken to cover the whole field of useless destruction of wild life, the article might be worth re-publication in pamphlet form also.

* * *

Among our Nature Records of this week are two of the appearance of the redbacked shrike or butcher-bird during November, some weeks after the last of those which had spent the summer here seemed to have departed; and it is significant that the records come from the extreme south-west of Wales and England. Manifestly, I think, it would be wrong to regard these birds as lingerers beyond their time in Britain. In that case, they would surely have been recorded on earlier dates from other places. Whereas the fact that they are suddenly discovered in the south-west coast in the middle of November strongly suggests that they must have arrived by sea—in the same way that foreign birds—such as the wall creeper—occasionally reach the same coasts in autumn and winter, miscarried thither by the wind. Incidents like this must, I think, be held to confirm my view that birds upon migration have no mysterious "sense of direction," etc., to guide them, but are simply

carried by the wind. There can be little doubt that these butcher birds—and, of course, many others—were miscarried by a wrong twist of the wind northwards to Britain instead of southwards towards Africa.

* * *

A similar conclusion must, I think, most certainly be drawn from our records of swallows and house-martins in this and the previous issue of *THE COUNTRY-SIDE*. On November 7th and 8th, for instance, they were recorded only from Cornwall and Devonshire; on the 9th and 10th from the Isle of Wight; and on the 11th and following days from several places in Sussex and several in Yorkshire. No theory of "mysterious instinct" in migration could account for these spasmodic re-appearances of the swallows in different maritime counties long after all our swallows seem to have departed; but we can easily understand how birds that have merely inherited the single instinct to fly, when their breeding cares are over, with the chilly north winds, are liable to be miscarried sometimes when the wind plays them false.

* * *

Some time ago a well-known naturalist, writing in *THE COUNTRY-SIDE*, referred to an alleged case in which a heron was credited with swallowing trout up to 2½ lbs. in weight. The possibility of this was questioned at the time, and since then Mr. A. Leitch, of Redcliff, Gourock, has forwarded the stomach and gullet of a heron, showing that—unless these organs are amazingly elastic—it would be no more difficult for the bird to swallow a five-barred gate than a 2½ lb. trout. Nevertheless, "impossible" is a hard word to use when a naturalist with a deserved reputation has stated an alleged fact; and one would like to know really what is the limit of the heron's "swallow," on the evidence of persons who are acquainted with the bird in captivity.

E. Kay Robinson.

Pan-Pipes.

My chaffinch! thine the Pan-pipes of the woods
When autumn blasts whirl wide across the down,
The motley leaves—red, daffodil, and brown—
Through lonely arches where dank twilight broods,
Now rings the frequent cry of two thin notes,
As silver-true as when an elfin call
Peals forth a summons to a fairy ball—
Hark! once again how clear the couplet floats!

Far off, beyond the uplands where the fields
Drab as a sparrow's wing are lying bare,
The low, last amber lights of evening flare
A tardy message that no joyance yields;
Unwooded, unwarm'd the autumn day is done;
Large, chilly drops fly slanting from the rack;
The hedgerows crouch, the yew-trees, stoled in black,
Seem marching to the burial of the sun—

My chaffinch! thou dost blow thy syrinx yet
As blithely as young Marsyas the reed;
Thou hast the careless, happy, old-time creed
That, with our introversion, we forget.
In last year's nest we find a loss to weep;
Hang wither'd hopes upon each naked bough,
Sigh with the fretful, wandering wind—but
thou
With cheery heart dost pipe thyself to sleep!

GERALDINE M. SEYMOUR.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

Special Advantage for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches; 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an Association in which no fees are charged for membership. Amount previously acknowledged, £13 7s. 1d. Since received: 2s., Mrs. Hebbert, Higher Blackley; 2s., Mr. F. W. Blackburne, Hastings; 1s., Mr. E. Lilley, Southsea. Total, £13 12s. 1d.

Free Distribution of Specimens.—The Rev. D. Smith, 3, Eden Villas, Edenbridge, Kent, will be glad to distribute any natural history specimens which members have to spare among the schools, etc., in the Edenbridge district. Mr. T. B. Roe of 76, Otter Street, Derby, is trying to interest children of the district in nature study, and would be glad of any specimens, literature, or illustrated cards, etc., to hang on the walls of their meeting room. He would pay postage or carriage on all specimens or literature sent.

Improving the Country.—Mr. A. L. Bonas, B.E.N.A. secretary for the Castle Acre district of Norfolk, reports that pains having been taken to protect the breeding kingfishers in his district this beautiful bird is now fairly common.

(Further B.E.N.A. notices appear on Page 58.)

Country-Side Lectures and Lantern Slides.

THE COUNTRY-SIDE has now ready Lantern Slides of the Zoo and Wild Life Stereographs. The photographs of the Zoo are the most recent taken at the Society's Gardens, and the Wild Life Set is absolutely unique. Each Lecture Set consists of forty subjects. The Wild Life slides are offered at 1s. 6d. each and the Zoo at 1s. each, or each set of forty may be hired for four shillings per evening, the carriage being extra.

Lantern readings by Mr. E. Kay Robinson to accompany each set are sold at 6d. (by post 7d.).

Arrangements have been completed with Mr. Frank Finn, the eminent naturalist, to deliver, on behalf of *THE COUNTRY-SIDE*, a series of lectures on the Zoo or British Wild Life, and those desirous of availing themselves of *THE COUNTRY-SIDE* scheme during the coming winter are invited to write immediately to arrange dates, terms, etc.

The lecture fee will, in all cases, be as small as possible. Full details can be had from the Manager,

LECTURE & LANTERN DEPARTMENT,
"THE COUNTRY-SIDE,"
2 & 4, TUDOR STREET,
LONDON, E.C.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Sparrows and Rat.—Sir,—I was paddling quietly up the river the other day, when a little hubbub on the bank attracted my attention. There was a small flock of sparrows fluttering over the head of a large brown rat, which was running to and fro after its tomentors. It even ran up small shrubs on which sparrows were perched. But at last, drawing a little too near we spoilt the game. The sparrows flew away and the rat sought refuge in the long grass.—Yours, etc., N. PERKINS, The Leys, Cambridge. [Sparrows will similarly mob almost any creature they mistrust—weasel, squirrel, toad, etc.—E. K. R.]

A Faithful Cat.—Sir,—Last year a stray cat came to our house of its own accord. We did not want it so we gave it to a friend. He lost it, however, and shortly afterwards it returned home. It was then given to another friend, and the same thing happened again. We again presented it to the same person, and, while in his possession it had three kittens. Leaving the kittens behind, it again returned home. We gave it away again to a friend two miles away. He lost it about a week after and saw it no more. Yesterday, October 26th, however, it again returned, after being away nine or ten months. Each time the cat returned it was compelled to cross water. We know the cat by my father having caught it in a trap set for rats and having crippled one of its paws.—Yours, etc., E. R. BUNN, Middlewich, Cheshire.

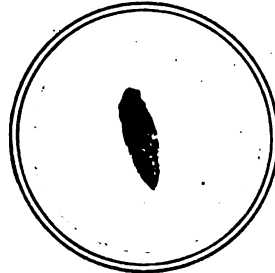
Bee-driving and Bee-keeping.—Sir,—Mr. B. Boakes's article in your issue No. 77, is very interesting, but I would recommend all bee-keepers, who are skeppists and those who are taking up this very interesting occupation, to go in for modern bar frame hives and utterly discard the old-fashioned skeps, except for swarm-taking, etc., in which case these are very useful.

Skeps are very well, but so inconvenient one never knows how one's stock is progressing, and can never be sure whether the hive is queenless, etc. Whereas, in our up-to-date hives, every frame can be taken out with ease and thoroughly examined. Another advantage of our modern hive, and the greatest of all, is that the honey taken from the top of the brood chamber at the end of the season is absolutely pure, that is to say, the zinc queen excluder which separates the brood chamber from the supers above, is so constructed that only the workers can go up and the queen has to remain below. Hence all honey stored above the brood chamber can be easily secured uncontaminated with either brood, pollen, old cocoons, etc. With skeps there must be a taint of these things in the honey.

There were many old-fashioned bee-keepers only a few years ago who always sulphured their bees in order to take the honey and I am afraid there are still many who adopt this cruel practice. How much better to drive the bees as Mr. Boakes showed in his splendid illustrations, but I am of opinion that there are more who kill their bees than undertake this simple and very interesting process. What a waste of life when in modern hives these can all be spared and ready to commence their labours in the following spring.—Yours, etc., L. M. CURTIS, Brant House, Holbeach.

The Magpie Moth.—Sir,—These three stages of the development of the magpie moth show a feature which is very rare in the insect world, because they all exhibit the colours black and yellow; while the caterpillar and the moth both have black and yellow spots on a white ground. In each case, no doubt, the meaning is that the insects are nauseous and flaunt a black and

yellow livery to warn the birds of the fact. It is this inedible character, of course, which enables the magpie, a slow-flying and weak-winged creature, to multiply so easily as to become a ruinous pest in fruit gardens. At this season the young caterpillars are "spun up" for the winter, usually in leaves that still cling to the stems and branches—having



Photos.]

[A. E. Tonge.

A Garden Pest.

The Caterpillar, chrysalis, and female and male of the Magpie Moth, which is very injurious to fruit bushes.

been attached thereto by threads of the caterpillars' silk. Many, however, are in leaves that have fallen and in various crevices. So in infested fruit gardens it is a good plan in winter to clear away all leaves from the fruit bushes as well as from the ground below and to dig quicklime well into the soil.

Weasel and Motor-Car.—Sir,—I was walking along the Maidstone Road between the Crown Point Inn and Ightham when I had to step aside to let a large motor pass. Just before the car got level with me I noticed a weasel come down the bank from the fir wood opposite with what I took to be a mouse in its mouth. Instead of rushing back into the wood until the motor passed it stood quite still and the car had hardly got half-a-dozen yards away before the weasel trotted across the road with his mouse, taking not the slightest notice of me.—Yours, etc., F. W. CROTHALL, Sevenoaks.

Tits and Fruit-Buds.—Sir,—Are you sure—as stated in THE COUNTRY-SIDE—that tits do no harm to the buds of fruit trees? At least two-thirds of my red currant and gooseberry bud is destroyed in late autumn and early winter—long before the bull-finches put in their appearance in my garden—and I have always attributed the mischief to the tits, which are always abundant here.—Yours, etc., H.T., Tiverton. [I think I am sure that tits do no harm to fruit-buds: but any evidence to the contrary which readers may have would be welcome, because our only object in THE COUNTRY-SIDE is to learn the truth.—E. K. R.]

Improving the Country.—Sir,—For some seasons past in my walks through the fields and bye-ways, I have sown seeds of various flowering plants in the hedgerows and banks and it struck me that if you were to suggest this being done in your valued paper, that there would be a great many of your readers who would be delighted to fall in with your suggestion. Apart from the pleasure which it would afford the sower in finding his plants in flower himself he would also be a benefactor to the public. It is a very simple process—here and there you prod a few holes and drop the seeds in. It gives added interest to a country walk—in fact anyone who tries it will find it a great incentive for a walk.—Yours, etc., RUSTICUS.

A Curious Freak Rose.—Sir,—I am sending for your inspection a freak rose (General Jacqueminot). You will observe it has petals down the stem and looks as though it had made two attempts to produce flowers before the final effort which was successful. Roses growing from an otherwise perfected bloom are fairly common but I have never come across a similar case to the one enclosed.—Yours, etc., ALBERT HILLMAN, Hailsham. [The specimen is a very curious one, suggesting that the flower had made several false starts, but was unable to check the growing point until this stopped, so to speak, of its own accord and permitted a perfect flower to be developed.—Ed.]

A Starling Sensation.—Sir,—On the morning of October 7th my attention was attracted to the eaves of an empty house at Eastville by a large number of starlings and sparrows being greatly agitated. I observed several birds in turn fly from the roof to a hole under the eaves and peep in. On the walls at the exterior of the hole were unmistakable signs of young birds and the noises common to the young of starlings were distinctly heard. But why all this commotion amongst apparently strange parents? In the spring-time a brood of young starlings on the point of leaving the nest would not as a rule cause such excitement. Perhaps it was because the old birds have more leisure time just now; or were some of them young birds, not having mated, and to whom youngsters would be a great novelty?—Yours, etc., G. MOGG, Bristol. [Something had gone wrong in the nest. Perhaps one of the birds was entangled in the material of the nest and could not get free. I have often found some accident of this sort to be the cause of excitement round a nest. Ed.]

The Real Black Rat.—Sir,—If your correspondent who shot the water-vole will send me his address I shall be pleased to send him the next specimen of the black rat which turns up. Here in Yarmouth they are getting too common for some people, and, as you say, they are quite well able to hold their own among their larger relations. We have two of the varieties, the dark and the Alexandrine, the latter being the rarer. The black rats here seem to prefer the dry parts of the buildings where they occur and it is often the case among the old warehouses to find that the ordinary brown rats haunt the cellars and lower floors and the black rats the upper ones.—Yours, etc., P. E. RUMBELOW, 2, Napoleon Place, Great Yarmouth.

Insects in Bananas.—Sir,—Re Mr. Smith's notes on this subject, I may say that this year I took from a single bunch three living pupæ: all three insects emerged safely in about three weeks. They were about the size and shape and also ground colour of our six spotted Burnet moth, with the addition of two white spots near the thorax. I also took from another bunch a beetle, not unlike our common house beetle, but considerably larger.—Yours, etc., L. M. CURTIS, Holbeach. [By "house beetle" is doubtless meant cockroach, which is not really a beetle. The large kind of cockroach found among bananas has been figured in THE COUNTRY-SIDE. The burnet-like moths are, however, an addition to our list of "Things in Bananas."—Ed.]

The Memory of Poultry.—Sir,—A gamecock was once given to me—he was own brother to one which had lately won a big stake in the North of England. Presumably the generations of gamebird that have been handled from chicks, makes them more intelligent and receptive of voices. This bird in particular had been in the habit of being with me from the time he arrived one evening about 6 o'clock, when I took him out of his hamper, fed and watered him by lamplight and sent him down to the hen-house where he was put on the perch. The next day he evidently knew me. About six months later I had to leave home for an indefinite time and then to look out for another house. The bird went to some friends who sent him to the keeper's house. Twelve months after he went there I arrived on a visit and proposed going to see the bird and remarked "I wonder will he remember me," for which I was laughed at. However, I took some pieces of cake and down we went. I saw the bird about a hundred years off sitting on a rail, I called in the way I always had. Up went his head and he decidedly stared in my direction. Calling again he came off his rail and walked towards me. I called again and he then seemed to remember, as he quickened his pace and came straight to me, eyeing me all the time. I held some cake to him and spoke as I used. He jumped up and took the cake from me clucking and calling as all game birds do whenever there are hens or chickens about. My friends and the keeper said they had never seen or heard anything of the sort before. I should mention that no particular notice had been taken of the bird from the time he left me.—Yours, etc., E.M.O.

Burrowing Streams.—Sir,—Just below the quarry in which the wild boar's skull recently figured was found, is the bed of a stream, which, except after heavy rains, is dry. It, at any time, you were to strike the stream a mile or so above this spot you would find it a substantial river strong enough and constant enough to work a flour mill. If you were to strike the stream a mile or so below, you would find the water deep enough in parts to swim across. Between these two points the river disappears and flows underground. This stream is not an exception. All the streams within a radius of about six miles (and they are a goodly number) have this peculiarity. The dwellers in the district speak in the most matter of fact way of the beck "sinking," as though all becks "sank," and

seem considerably surprised at any expression of surprise.—Yours, etc., W. N. MACARTNEY, Monteith Row, Glasgow.

The Work of the Ivy.—Sir,—I enclose photo of an elm tree being strangled by ivy. This shows about 50 feet of the tree quite covered by it and is the finest specimen of the kind that I have seen.—Yours, etc., H. WATTS, Churton Street, S.W. [This picture seems effectively to answer the question which is often asked, whether ivy injures the trees upon which it grows. Who can doubt that, but for the presence of the ivy, this lofty elm tree would be bearing some noble branches?—Ed.]



Photo.]

Elm and Ivy.

[H. Watts.]

Showing how completely ivy may envelope a large tree to the detriment of its natural growth.

A Cat and the Fire.—Sir,—I wonder if any of your readers have ever known of a cat to have such a curious objection to fires and warm places as my cat "Zeta" has. It is most amusing to see her horror of the fires when we begin them in the autumn. She hisses at them and runs past as fast as she can, carefully avoiding the hearth rug. In my bed-room I have a gas stove which is often lit in the winter and one day, although it had not yet been lighted when I took her up to my room, she seemed suddenly to remember that fires were beginning and in fear that it might be lit she rushed out of the room hissing at it. I am not aware of her ever having been hurt by a coal jumping out of the fire to account for this strange dislike. She also will not lie on furs of any kind, especially objecting to cat-skins, which our other cat loves.—Yours, etc., A. J. PECKOVER, Wisbech.

Hedgehogs as Milk-stealers?—Sir,—The farm labourers about here will not be con-

vinced that the hedgehog does not suck the cows, which is apparently an impossibility for such an animal. But about six weeks ago we were carting from our sheepyard and under the wooden manger, which runs along the whole length of the covered-in part of the yard, we found two hedgehogs, a male and female. It occurred to me that although a hedgehog could not suck a cow, perhaps it might be able to suck a sheep. The cows are never turned into this yard, but sheep are in it most of the nights of the cold weather after Christmas. Perhaps some of your numerous readers could throw some light upon the matter. Thanking you very much for THE COUNTRY-SIDE which I look forward to every Wednesday and looking patiently for the day when the C-S weekly copy will be as large as the "special enlarged numbers."—Yours, etc., W. F. JOHNSON, Chesterton Fields, Leamington, Warwickshire.

Botany in the Strand.—Sir,—While passing by the Law Courts end of the site between Aldwych and the Strand, I was surprised to find that what had been nothing but a wilderness of bricks and mortar a few months ago has been rapidly changing into a rough jungle. Looking through the railings on the Aldwych side, I saw several kinds of grasses, some thistles, dandelions, a lot of plantain with purple seed stalks, thousands of plants of groundsel, some in seed but mostly young plants, also some broad-leaved plants which I took to be butter-bur (more likely colt's foot, Ed.) and strangest of all, a strawberry plant with several strong runners growing from it, this was growing within 3 or 4 feet of the railings. No doubt the birds and the wind would account for most of the above, but it would be interesting to know how the strawberry plant became established.—Yours, etc., R. W. PETHEN, Islington, N.

Aquarium Work.—Sir,—I was glad to see the Rev. J. Thomas's letter (Vol. III., p. 263) on this subject and hope other readers will contribute. Personally, I have no experience of anything larger than newts, my aquaria being devoted to the development and preservation (for a time) of microscopic life. I always fill them with tap water in the first instance, and never change it, unless I wish to empty them for purposes of rearrangement. The loss by evaporation is supplied by the addition of tapwater from time to time and by the emptying in of water from ponds, which I have brought home on "fishing" expeditions after fresh stock. I put a layer of silver sand at the bottom and bury in it the roots of pieces of *Nitella* or the water moss called *Fontinalis antipyretica*, which is heavier than water. Either of these plants will grow freely and keep the water perfectly fresh and clear for any period, but the *Nitella* is apt to become colourless and decay. No other of the common water plants is of the slightest use in aquaria in my experience; they all gradually decay and fall to pieces, whether rooted or not. This may be due to lack of nourishment, or snails; it certainly is not due to "too much [animal] life in the water," as Mr. Thomas says; at least, not in the case of my aquaria. As to feeding, I think *Cyclops*, *Cypris* and *Daphnia* can support themselves well enough on decaying vegetable matter in a well-established aquarium, and they, in their turn, support the Hydras. For *Polyzoa* and *Rotifera* try fresh pond water, not too clear, but quite sweet, condensed in a tube-net and given in small doses daily. *Melicerta*, *Floscularia*, *Stephanoceros*, *Limnias*, etc., will, however, exist for weeks without any attention in a bell-glass aquarium a foot in diameter, arranged as above; under such conditions *Melicerta* will often multiply exceedingly. I fear it is hopeless to attempt to keep *Volvox* alive for more than a few days. They require sunlight, which is difficult to supply without heating the water. In any case I think they should be kept out of doors.—Yours, etc., C. NICHOLSON, Chingford.

Profitable Poultry Culture.

By "CHANTICLEER."

Houdans.

WITH confidence I recommend a well-tryed French fowl which, since its arrival on our shores, has given an excellent account of itself. I refer to the profitable Houdan which in France occupies a similar position as a table fowl in that country to the Dorking in Great Britain, except that, whilst the latter fowls are moderate layers and sitters the handsome Houdan is a non-sitter and a wonderful layer of large size eggs.

After experience I can testify to its being one of the finest race of fowls; its qualities even surpass its beauty, for, as the accompanying drawing shows, there are marked and unique distinguishing features of this breed.

Attractive Appearance.

The birds have a full and heavy attractive crest, almost, if not quite, covering the head, whilst the comb is triple, the outsides opening somewhat like the leaves of a book or a butterfly with spread wings, the cock having the most ornamental head-gear, which he shows to advantage. The beak is horn coloured and short, eyes red, wattles short and rounded. A feature of the male bird is its muffs or whiskers and beard, which are large, full and compact, hiding most of the face, which is red except the earlobes, which are white or pinky white. The hen corresponds to the points of the cock.

The body has a very bulky appearance, the breast being deep, full and long, whilst the back is broad and of good length. The tail is full and arched in the cock, while in the hen it should be medium and carried well away from the body.

The Houdan has five toes (like the English Dorking) the fifth curving upwards and starting clear from the fourth toe. The toes must be straight and well spread to be typical.

The plumage may be described as black and white spangled, which I would explain as feathers glossy black throughout in colour but edged evenly with white; the young birds are usually much darker than old ones.

Good Table Poultry.

As table poultry Houdans make rapid growth, the chickens being fit for the table at sixteen weeks old, while the bone is small and the flesh very white and will often weigh, ready for cooking, four pounds. Adult birds generally turn the scale at seven to eight pounds.

As layers they have a high reputation, the eggs being very large. This breed makes its influence felt with almost any variety of fowl and wonderfully improves stock generally, especially in such breeds as Leghorns and Minorcas, improving the size and egg-producing properties, while their appearance is also enhanced by the half-crest. In France they are largely bred with profit and I am pleased to add that English poultry-keepers are fast recognising Houdans as a most profitable breed to keep, whether in confinement or at liberty.

A Fascinating Hobby.

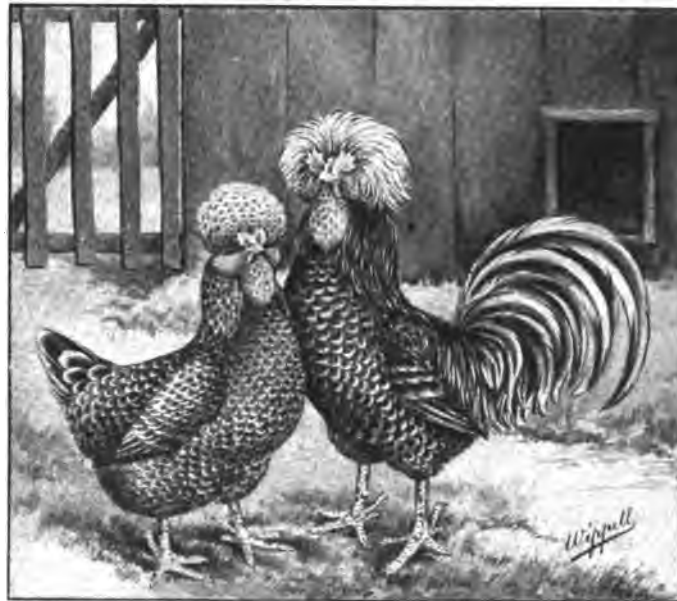
I can honestly state that one of the most diverting and fascinating hobbies is that

of the poultry keeper. Experience is of the utmost value, and in a short time and with little outlay or trouble the poultry hobbyist soon commences to add to his income and his hobby become a certain source of profit.

Those who join the ranks of poultry-keepers will soon make many friends whose experience will prove valuable.

Great Britain to-day rejoices in an army of poultry fanciers who are daily striving for the best result, whilst the healthy excitement which the fancy provides is a matter for congratulation, for once let the poultry-breeder step into the show arena, and the spirit of competition, so strong in the minds of true Englishmen, is quickly displayed and carried on to a wonderful extent.

Again, for health's sake I contend that the care and attention needed for the correct rear-



Houdans.

This fine fowl occupies in France the position of the Dorking in Great Britain.

ing and breeding of pure-bred poultry of good type, and in accordance with the standard of excellence, is a really healthy and diverting exercise, especially after the troubles of a business life. When caring for the wants of life and requirements of our birds, small or large, our thoughts are indeed far away from the haunts of business.

Some readers may ask: What is a fancier? And for their benefit I will explain that a true poultry fancier is one who, by strenuous exertions and dint of perseverance, devotes spare time to the proper treatment and exhibition of pure-bred stock. Further, a fancier is one who, by word, action, and influence, does all in his (or her) power to rid this country of the mongrel.

The genuine fancier delights in pedigrees, strains, and purity of breed; who feels it his bounden duty, whenever an opportunity offers itself, to lift his voice in sounding the keynote to the fancier's song, "Blood will tell."

A Voice from the Cape.—Mr. Henry Gearling, of Messrs. Cunningham and Gearing, Atlas Works, Cape Town, writes:—"Some time ago my newsvendor poked a copy of your paper under my nose, and ever since it has been a welcome weekly waft of old country air to a keen lover of the same."

Amateur Photography.

Notes for December.

THE photographic work which can be done in December depends to a great extent on the weather which prevails. In some years day after day is dry and frosty, and there are wonderful studies of hoar frost. In other cases, the days are dull, dark and misty, so much so that there is nothing which can be done, except to enlarge negatives or make some of the best into lantern slides.

Hoar frost studies are most beautiful when a good negative can be secured. But it has to be borne in mind that this dazzling white against the blue sky is, photographically, white against a white sky; and so some special means must be adopted to cut down the blue rays, and secure the contrast which will give a truthful picture of the scene.

An isochromatic screen is most valuable for the work. It should not be of too high intensity, as the great danger in the use of these screens is that they over-correct the picture. A three times screen is as intense as need be for out of door work, where there are not violent colour contrasts.

An exposure meter of the Watkins or Wynne kind is most useful in making winter subjects. The light is most deceptive, and cases of under exposure are far too frequent. It is a fact that is best always borne in mind, that moderate over exposure is not hopeless, but even slight under exposure is fatal.

It stands to reason that if a hoar frost picture is attempted against a grey lowering sky, there is no need to use a screen which will uselessly prolong the exposure. The dark clouds will throw up the frost clad boughs amply.

Excellent hunting pictures can often be got on a fine December morning. The best plan is to try and get incidents instead of wasting plates on the pack of hounds *en bloc*, or a massed crowd of horsemen and women. A fertile field for study is to be found on the outskirts, where often a horse-breaker schooling a young horse will give a picture which may be worth

a good deal both in an artistic and also a monetary sense. It is best to try and get out in the open, being well away from hedgerows, and also the borders of wooded coverts.

Though an isochromatic screen cannot be used when getting hunting pictures, yet a good deal of assistance in the way of colour rendering can be had from using isochromatic plates. Edwards' Snap Shot isochromes are extremely good as also is the new Imperial Rapid Isochromatic plate. The best time for work is decidedly limited, being only from about 11.30 to 2.30. After, or before these times, it is sheer waste of plates trying to get good rapid exposures, and in December, if it is not a very sunny day, rapid work is hopeless.

Enlarging the pictures taken in the summer for Christmas cards is interesting winter work. At the present day an enlarging lantern can be had for a very small sum, and what is more the camera used in taking the original picture can be used in conjunction with the lamp and condenser, thus doing away with the need for an extra lens. Messrs. Houghton sell a very nice lantern for use with their Folding Ensign camera for the low sum of £1 17s. 6d. It can be adapted at a small charge for use with the same type of camera made by other firms of manufacturers.

F. J. E.

Additions to the Natural History Museum.

By R. Lyddeker.

THE cast of the fore part of the skull, with the front horn, of a black rhinoceros from British East Africa, presenting a very remarkable abnormality has been added to the rhinoceros case in the Lower Mammal Gallery. The specimen is the gift of Mr. Frank Baden-Powell, who has also promised to present the original skull, although he will retain the horn in his own collection.

The abnormality consists in the fact that the front horn, which is of considerable length, is projected forwards at an angle of about 45 degrees, instead of having the normal upright direction.

Usually, this horn is attached to a small roughened boss on the upper surface of the skull, but in the present instance it rests on the forwardly-sloping front surface of the nose-bones. In order to support it in this position, which, of course, induces an abnormally heavy strain, the base of the horn is greatly expanded, and rests on a large plate-like disc on the nasal bones.

Possibly the horn was knocked out of its normal position when the animal was young by a blow, and Nature has evolved these special features to meet the emergency.

Visitors to the Reptile Gallery have been afforded the opportunity of inspecting the supreme development of the poison-apparatus in the viper group by the installation of a skull of that terrible serpent, the West African puff-adder, or viper (*Bitis gabonica*). The specimen to which the skull belonged was about seven feet in length, and the poison-fangs in the skull itself are considerably more than an inch long.

To show the course taken by the venom, a bristle has been inserted into the duct in each tooth. From the body of the snake, which was a female, no fewer than some thirty young vipers were taken, each measuring nearly a foot in length. Little wonder that we see such appalling lists of death by snake-bite if this be the normal rate of increase of these noxious reptiles.

Here, perhaps, I may be permitted to refer to a very curious specimen received some time ago at the Museum, although it has not been placed on exhibition, nor will it be retained in the collection. It is the mummified body of one of those tiny little tropical American monkeys, commonly known as Marmosets, specimens of which are often kept as pets so long as they will live in this country.

The curious circumstance about this monkey-monkey is that it fell out of a branch of a tree in a garden in Arkwright Road, Hampstead, which was blown off during a gale in 1903. Whether the animal had escaped from the Zoological Gardens, or whether it had been kept as a pet by some former owner of the house, is unknown.

The mention of trees reminds me that a most exquisite example of nature-teaching in connection with trees and their foliage is now in course of installation in the central bay on the right side of the main hall of the building.

Photographs of a large number of individual trees of various species in their summer and their winter conditions occupy

conspicuous positions in the cases; and around these are grouped specimens of the bark, buds, and leaves of the same species, the leaves being, of course, models. Especial attention is directed, by means of such models, to the phenomena of the bursting of buds, the formation of new leaves, and the withering of old ones by means of a constriction in the outer layer of the stem. A more instructive and a more effectively installed exhibit could scarcely be imagined.

The Week's Wild Life in Pictures.

(See next page.)

ONE of the most silvery and graceful of little fish in spite of the fact that its favourite haunts are at the outlets of drains, the bleak (1) affords plenty of miniature sport to the juvenile fly-fisher in summer; but at this season it keeps nearer to the bottom, and occasionally annoys the angler by taking the bait intended for larger fish. By its slender shape and silvery colour, and by the lower lobe of its tail being slightly longer than the upper, you can recognise the bleak; and it is a fish of special interest, because the nacre in its scales has been largely used in the manufacture of artificial pearls.

2. The common bramble deserves almost to be classed as an evergreen, because a large number of its leaves always remain throughout the winter. Then, however, they take on a blackish hue; and one of the conspicuous signs of early spring will be the pale green buds swelling at the bases of these old black leaves.

3. On salt marshes, the estuaries of rivers, or wherever else the tide of the sea daily covers and uncovers stretches of mud into which the redshank can thrust its bill, there it will almost always be the most conspicuous feature of British wild life in winter—much too conspicuous, indeed, for the wildfowler whose stealthy approach towards better quarry is often rendered vain by some unnoticed redshank that suddenly gets up with its whimpering cry of "Piu-pu-pu" and spreads alarm far and wide. Yet for those who wander by the waves to see and hear, but not to kill, the redshank's note seems the very music of the marshes and its swift wavy flight on curved, white-edged wings always a pleasure to watch.

4. If the bramble, as figured above, turns black in winter, so does not the bracken fern. Day by day the red gold which succeeded the rich green of summer, bleaches its arching fronds to straw colour or flaxen; and, if you wander now over some pineclad tract of heather mixed with bracken, I think you get some colour effects which the whole wide world cannot excel. The blue-black of the pines' foliage above the ruddy trunks and the many shades of amber in the bracken, against the grey-purple of the heather, glorified by the flaring beams of a December sun, when frost is in the air—then each hill-slope seems a vista of fairy land. From all other British ferns the bracken can be distinguished by its large branched fronds coming singly out of the ground.

5. The centipede is one of those creatures which cause most of us to shudder, as do spiders and cockroaches, upon a near acquaintance. Probably this points

to the origin of our race in other climes, where similar creatures are venomous and dangerous. Here, however, our inch-long centipede is harmless, although the sudden death of fly or moth which it seizes with its nippers suggests that, if it were larger, we might think otherwise. Sometimes, when a tree trunk has been "sugared" for moths you will see the centipede not only eating the sugar, but carrying off a moth; and there is something rather weird in the ease with which it suddenly seizes and bears away its fellow reveller. The common centipede can be recognised by its short length in comparison with its width.

6. The toad might also be classed, like the centipede, with creatures that are unreasonably disliked and dreaded; and at this season, when cellars are overhauled for the winter and the contents of out-houses re-arranged, no shock for the servants is more common in the country than the discovery of toads hiding in corners and crevices whither they have retired for the winter. In the matter of cellars no means of entrance from the outer world seems too narrow or obscure for toads to find it. The common toad is distinguished from the frogs by its squat shape and rough skin, and from the natterjack toad by not having a yellow line down the back.

"Boy and Girl: Should they be educated together?" is the title of a little paper book by "Vivian Grey" and Edward S. Tylee, M.A., published at 1s. by Simpkin Marshall. Except for those who are keenly interested in the topic, the book is scarcely worth the shilling; because, although it is described as "a study of the principle and methods of co-education," it is really a keen *ex parte* argument for the education of boys and girls together. It states that this system has been found most successful at Keswick School; at Bedales, near Petersfield in Hampshire; and at King Alfred's Schools at Hampstead. If this is so, success will no doubt assure imitation. Many of us will, however, be inclined to dissent from the main argument by which the American Republic, the pioneer in this "mixed learning" movement, supports its policy. The education of boys and girls together, the Republic officially declares, is "natural." Does it not, however, seem more "natural" that in the early days the father of a family should have taken his sons out into the fields to teach them to be bread-winners, while the mother took her daughters to the workroom and the kitchen to teach them how to keep the household on the bread provided? To say that the education of boys and girls together is "natural" begs a large and thorny question.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

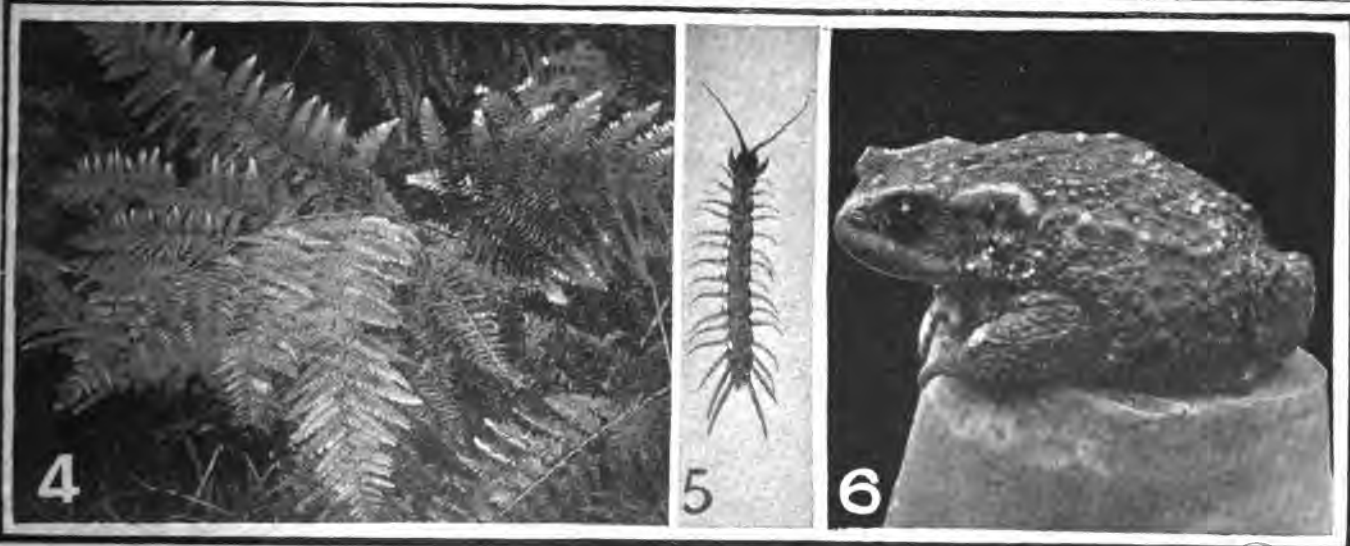
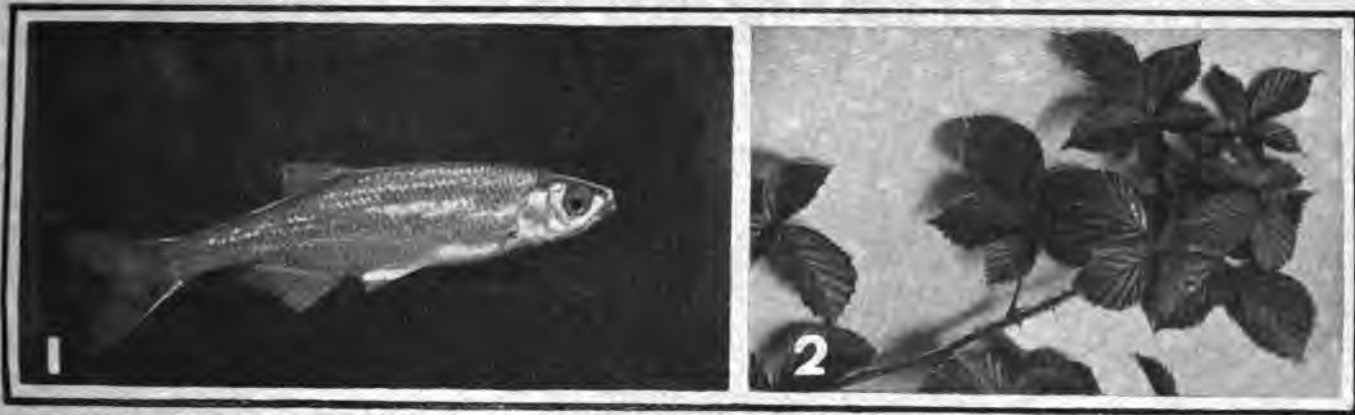
21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Mole; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 54.)



1. Bleak, *Alburnus lucidus* (S. and W. Johnson). 2. Leaves of Bramble, *Rubus fruticosus* (B. Wyles). 3. Redshanks, *Totanus calidris* (A. Quatremain). 4. Bracken, *Pteris aquilina* (F. Lumbers). 5. The Common Centipede, *Lithobius forficatus* (G. Parkin). 6. Common Toad, *Bufo vulgaris* (B. Hanley).

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

STRIPED HAWK MOTH.—There has been a succession of records of captures of this rare moth during 1906, the dates ranging from June to November. The illustration shows one of the earlier specimens.

EAGLE.—One observed near Wells, Norfolk, on November 16th.—(J. P. K. R.)

DOTTEREL.—An immature specimen shot about the beginning of November at Blakey, Norfolk.—(J. P. K. R.)

SPOONBILLS.—Three shot in Poole Harbour, Dorset, about November 6th.—(C. Pottle.)

RED-NECKED PHALAROPE.—A specimen of this rare bird, seldom seen so far south, recently shot in Pembrokeshire.

EIDER DUCK, shot at Wells, Norfolk, on November 13th.—(J. P. K. R.)

Birds on Migration.

RED-BACKED SHRIKE, on November 12th and 13th at Pembroke, S. Wales.—(A. John.) At Salcombe, S. Devon.—(C. A. Speyer.)

NOTES FROM EAST LOTHIAN, N.B.—On November 10th two long-tailed duck among flocks of velvet and common scoters on the sea. A few eider duck still remaining, and a flock of 150 pink-footed geese.—(H. D. Simpson and A. Urquhart, Gullane.)

SWALLOW, seen at Lewes, Sussex, on November 11th.—(E. E. Dennis.) Continuously from October 30th to November 13th, again on November 17th, at Masham, R.S.O., York.—(T. H. Calvert.)

HOUSE MARTINS, at Lewes, Sussex, on November 11th and 13th.—(E. E. Dennis.) At Scawsby, near Doncaster, York, on November 11th.—(J. W. S.) On November 11th near Horsham, Sussex.—(A. S. S. Thompson.)

London Notes.

PEEWIT, seen on Wandsworth Common on November 14th.—(D. W. M. White.) **HEDGESPARROW,** with white head, seen on November 17th on Streatham Common.—(J. G. State Moore.)

Marked Birds.

Rook, with white splashes and white feather

in left wing, seen at Tottenham during the spring and early summer, returned there in October.—(J. M. Barter.)

Late Nests.

HOUSE MARTINS left the nest on October 6th, Winchburgh, West Lothian, N.B.—(A. Munro.)

Birds' Song.

BLACKBIRD, on October 18th at Windsor, Berks.—(E. J. D. Peters.)

Butterflies and Moths.

SMALL COPPER BUTTERFLY seen at Sa'combe, S. Devon, between November 2nd and 15th.—(C. A. Speyer.)



Photo.]

Striped Hawk Moth.

Copyright.]

Plants.

STRAWBERRY blossoms and ripe and unripe fruit picked on November 14th at Wilmslow, Cheshire.—(W. R. Sidebottom and W. F. White.)

THE GARDEN.
Work for the Week.

Fruit Trees.

FRUIT trees that have grown freely but failed to crop satisfactorily would probably be more productive after root-pruning, an operation that should be performed now.

The object being to check the growth of the branches by cutting away some of the

strongest of the feeder roots, and especially the tap-roots, a trench should be dug three feet from the stem of the tree and on three sides, leaving the fourth side to be done next winter.

The trench should be dug straight down and three feet deep so that no strong root will be missed. Instead of returning the soil into the trench it should be filled up with poor soil, sand, or even coal ashes, the object of this being to prevent strong growth and induce the formation of what are called fruit-buds.

How to make a Fernery.

There are many gardens in which a hardy fernery would be a pleasing feature and a source of enjoyment. The cost of constructing one is principally that of labour, the material required being ordinary garden soil, a few pieces of rough stone, or large chunks of brick-rubble.

For large constructions a few tree boles, set roots uppermost, are excellent. Shade is not essential, but moisture is, and for that reason the fernery should be where it would not dry quickly or where there is a plentiful supply of water.

An excellent arrangement is that of throwing out a wide trench, piling the soil irregularly on each side, making a path at the bottom of the trench, and then planting the sides with ferns, working in stones, tree roots, etc., along with them.

Ferns for planting in a hardy fernery can be purchased from specialists at about 6d. each. The plants hawkers offer are too often badly mutilated, and do not comprise much variety.

MOST EASTERLY NURSERY

IS STILL THE BEST FOR FOREST TREES, FRUIT-TREES, SHRUBS, ROSES, PLANTS, BULBS. HEDGING A SPECIALITY. I have an enormous stock of the above and can supply in any quantity or variety. Write now for my **LARGE CATALOGUE**. It will repay you, for it contains **A Startling Offer**. I pay **Carriage and Pack Free** to your Nearest Station. **Weight or Distance No Object**. Avoid further disappointments and secure your trees, &c., from a hardy neighbourhood, they are bound to thrive and invariably please.

E. GAYE GULTON BROAD NURSERIES LOWESTOFT

FREDERICK CARTER & SONS, Ltd., WOKING.
SPECIAL OFFER (Just arrived):

	s. d.	s. d.		s. d.	s. d.
Dielytra Spectabilis, strong clumps	0 6 each.	3 6 per doz.	Lilium, "Speciosum Album" giant bulbs	0 6 each.	3 6 per doz.
Gladiolus, "Brenchlyensis" giant bulbs	0 9 per doz.	5 0 per 100.	"Speciosum Rubrum" "	0 6 "	3 6 "
"Gandavensis" "	0 9 "	5 0 "	"Speciosum Roseum" "	0 6 "	3 6 "
"Lemoines" "	0 9 "	5 0 "	"Speciosum Punctatum" giant bulbs	0 6 "	3 6 "
"Childsii" "	1 0 "	7 6 "	"Tigrinum Single" giant bulbs	2 0 per doz.	12 6 per 100.
"The Bride" "	0 6 "	3 6 "	"Tigrinum Double" "	2 6 "	15 0 "
German Iris, splendid mixed	1 6 "	8 0 "	Hyacinthus Candelaeans	1 6 "	8 0 "
Lily of the Valley, "Berlin Crowns," very strong	0 9 "	5 0 "	Montbretia, splendid mixture	0 6 "	3 0 "

ORDERS 10- AND UPWARDS CARRIAGE PAID. TERMS: CASH WITH ORDER.

THE CELEBRATED WOKING ROSES—All Extra Strong.

COLLECTION NO. 1.

- 12 Extra strong H.P.
- A. Colomb
- Abel Carrière
- C. Lefebvre
- Capt. Hayward
- Duke of Edinburgh
- Duke of Teck
- General Jacqueminot
- Margaret Dickson
- Mrs. S. Crawford
- Mrs. J. Laing
- Prince Camille de Rohan
- Ulrich Brunner

7/6, carriage paid.

COLLECTION NO. 2.

- 12 Extra Strong H.T.
- Bessie Brown
- Caroline Testout
- Capt. Christy
- Gloire Lyonnaise
- Gruss an Teplitz
- K. A. Victoria
- La France
- La France, white
- Mme. A. Chatenay
- Mme. Jules Grolez
- Mrs. W. J. Grant
- Vis. Folkestone

10/9, carriage paid.

COLLECTION NO. 3

- 12 Extra Strong Tea and Noisette.
- Celine Forestier
- Caroline Kuster
- Francisca Kruger
- G. Nabonnand
- Mme. Lambard
- Maman Cochet
- Marie Van Houtte
- Maman Cochet, white
- Mrs. Ed. Mawley
- Papa Gontier
- Souv. de S. A. Prince
- Souv. de Catherine
- Guillot

12/-, carriage paid.

COLLECTION NO. 4.

- 12 Extra Strong Climbing.
- Ards Rover
- Belle Lyonnaise
- Aimée Vibert
- Clg. K. A. Victoria
- Clg. Mrs. W. J. Grant
- Clg. Devonienis
- Gruss an Teplitz
- Gloire de Dijon
- Longworth Rambler
- Reine Olga de Wurtemberg
- Red Gloire
- W. A. Richardson.

15/-, carriage paid.

PLEASE TAKE SPECIAL NOTE.

In "The Country-Side" for November 10th we offered Bulbs, and we shall be pleased to execute your orders on the same terms as quoted.

CHOICE EXTRA STRONG ROSES—At Very Low Prices.

Blush Rambler, 1/6. Crimson Rambler, 8ft. to 9ft., 1/6. Dorothy Perkins, 8ft. to 9ft., 1/6. Electra, 1/-. Helene, 1/6. Pink Rambler, 1/6. Poly's Simplex, 1/. Paul's Carmine Pillar, 1/6. The Lion, 1/6. Mme. Jules Grolez, 1/6. Clg. Mrs. Grant, 1/6. Claire Jacquiere, 1/6. Clg. K. A. Victoria, 1/6. Clg. Papa Gontier, 1/6. Clg. Perle des Jardins, 1/6. E. V. Hermanns, 1/6. Mad A. Carrière, 1/-. Philadelphia Rambler, 1/6.

Six plants and upwards, carriage paid.
Dorothy Perkins, 4ft. to 5ft., 1/-. Crimson Rambler, 4ft. to 5ft., 1/-. Frau Karl Druschki (Special), 1/-.
Four plants and upwards, carriage paid.

FULL ROSE OR FRUIT TREE LIST SENT POST FREE.

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The Garden.

Pointsettias.

Splendid Decorative Plants.

TO the natural order Euphorbiaceæ we are indebted for several decorative garden plants, but for all-round magnificence one must unhesitatingly accord the palm to the subject of the present note—*Pointsettia pulcherrima*.

This splendid South American Euphorbia is one of the finest winter flowering plants for the warm house which we possess, and should be certainly grown wherever suitable conditions can be provided. The actual blooms of the Pointsettia are quite insignificant, and would be almost unnoticed were it not for the fact that each head of blossom is surrounded by a number of bracts, flaming crimson in colour.

To get really shapely plants of Pointsettia the best method is to take side growths from old plants about May; as the sap will flow out from these very freely it is desirable to dip each in sand to check the waste. Then place each cutting in a thumb pot filled with some light soil, and settle the whole in a brisk bottom heat. Nice plants will soon be formed, and these must be potted on as required.

During the warm summer months the young Pointsettias will be best if they are removed to a frame, although at the first sign of frost they should be taken into warmer quarters. In a temperature which should scarcely be less than 55 degrees, the plants must be grown on without check, until, if all has gone well, the display of resplendent bracts should commence about the month of December. At this time the plants will appreciate the application of a little weak liquid manure.

Pointsettias are peculiarly liable to attacks from "mealy bug," and this troublesome pest must not be tolerated a day longer than can be helped. To remove the little woolly creatures there is no remedy so good as the old one, of washing off with soft soap and water.

There are several varieties of Pointsettia extant, one with creamy white bracts (*P. pulcherrima alba*), being well worth cultivation. Some of the other kinds have much larger bracts than are seen in the normal species, whilst a form called *plenissima* has a very great number of the showy appendages.

Planting a Wall Garden.

I WANT to call attention to some of the most suitable plants to establish either in a "dry" wall or in the interstices of an old stone and mortar wall. Plants established at the present time should flourish well and flower prodigiously when their time comes to do so.

Never experiment with plants of a large size; introduce them into their quarters before they have made any great quantity of roots and while still young; or, if old plants must be used, divide them carefully into small

portions, and it goes without the saying sun-loving plants should be established on the warmer, sunnier side, while ferns and shade-loving plants will find a welcome place on the cooler side.

For the warmer side the Dianthus family will prove invaluable. *D. casius* and *D. casius La Boule* make grand patches of colour at the height of summer, and often continue flowering well on into the autumn. *D. deltoides*, *D. neglectus*, and *D. alpinus* may all be introduced with dainty and beautiful results.

The Campanulas, again, yield splendid material for wall cultivation. *C. garganica* is never happier than when so placed. *C. muralis*, and even the fine *C. isophylla* flourish well. This last is generally grown as a pot

There is nothing quite so easy to establish as a wall subject as *Corydalis lutea*. It grows, it flowers, and it seeds freely, and the foliage is well nigh as dainty as the Maidenhair ferns. Considering its long, fleshy roots, one wonders that it is so robust as a wall plant, and it is a lesson not to judge by appearances when planting. The London Pride (*Saxifraga umbrosa*) is never seen to the same advantage as when planted fairly high in the wall, and we can look into the minute flowerets at close quarters. It is one of the best of wall plants, too, and becomes large, massive patches.

The *Gentiana acaulis* is one of the choicest of all wall plants. It is a little difficult to establish, but if year-old plants be firmly pressed in and a little loamy soil accompany them they should succeed, especially if they are looked after frosty weather, and pressed back firmly if they have become loosened. The Mossy Saxifrages may be freely used, and of all the varieties there is no white flowered variety to equal *S. compositi*, known sometimes as *S. Wallacei*—the flowers are larger, white, and very persistent. Violas can be made exceedingly effective in this manner, and also many of the hardy primulas, while for sweet scent is the old favourite, the common musk.

F. M. WELLS.



Photo.]

Pointsettia Pulcherrima.

[S. L. Bastin.]

A plant with small flowers but brilliantly coloured bracts, which render it the gayest of all our winter decorators.

"How to Find and Name Wild Flowers," by Thomas Fox, F.L.S., published by Messrs. Cassell and Co., represents a bold attempt to break away from those established methods of identifying plants, which need a certain amount of botanical knowledge. Classifying plants, first, by the month in which they appear, second, by the colour, and third, by the size of their flowers, Mr. Fox narrows down the choice of reasonable limits, and no doubt the book becomes extremely useful to those who use it frequently. It has large drawbacks, however. The monthly arrangement, for instance, gives only one flower, the ivy, for October and none for November, December, or January. Where, then, should one look for the sixty or seventy flowers that are found in bloom whenever November is at all mild? Looking through the months we find them scattered as far back as June and one, at least, of the commonest winter flowers, the white dead nettle, is given to April. Nevertheless the book will certainly be useful to those who begin to use it in February and keep on steadily.

AN ALL-BRITISH GARDEN.

A GARDEN devoted exclusively to British plants would surprise and delight many people, and would also serve a useful purpose in the direction of nature studies. There are a great many more really decorative plants among our natives than is generally believed.

Such plants as the pasque flower, globe flower, monkshead, Welsh poppy, stock, wall-flower, carnation, sea holly, chrysanthemum, mullein, snapdragon, foxglove, primrose, sea lavender, iris, gladiolus, narcissus, snowdrop, snowflake, to name only a few of the herbaceous Britishers, are found in themselves make a good show. Then there are such shrubs as the rose, daphne, broom, heath, honeysuckle, guelder-rose, and the trees, which include plum, cherry, apple, alder, birch, hazel, hornbeam, willow, poplar, Scotch pine, juniper, and yew.

It is quite certain that a selection of the most ornamental of purely British plants might be made to furnish a garden of a most delightful kind. There is a great chance here for the amateur of means who would like to show what a wealth of garden plants we possess among our natives.

plant, and it is not widely known that it is quite hardy.

Hardy, too, is *Saxifraga sarmentosa* (Mother of Thousands), and its parti-coloured foliage makes welcome variety. The *Sedums* and the *Sempervivums* are hosts in themselves, and some of the choicest varieties should be introduced. *S. sieboldi*, for instance, makes the wall gay with blossom late into the autumn, while *S. spurium atrosanguineum* makes large patches of colour. Where a large surface has to be covered *Cerastium tomentosum* is very welcome on account of its silvery white foliage the year through, and it hangs in wonderfully graceful festoons.

I have always been glad that I planted *Aubrietia* or an old bit of wall, as it makes colour the springtime through, and in fine, dense masses. The white foliage of *Acaena* is distinctly effective, and *Acantholimon glumaceum*, with its rose flowers in summer, though rather tall, is excellent, and so, too, are *Poppies* and *Wallflowers* and *Antirrhinums*.

But I must pass on to the less sunny side.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (similar to that on the next page), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Wren's Autumn Song.—No, it is not unusual to hear the wren singing at the end of October, or at any time during the late autumn and winter.—(to C. J. WARD.)

Wood Mice.—The long-tailed, large-eyed, sandy-coloured mice found in a nest 18 inches from the ground among woodland undergrowth were wood mice or, as they are often called, long-tailed field mice. What is interesting is that some of them were half-grown young; because a single female wood-mouse will produce 36 young by July and if it goes on breeding until late in October it must be almost the most prolific of British mammals.—(to W. DAY.)

Moths' Eyes at Night.—The brilliant gleam of a moth's eyes at night is not confined to large kinds, like the death's head which you saw. Often, when the collector turns his lantern upon a "sugared" tree or upon ivy blossom, etc., he detects the presence of some of the moths by the emerald, ruby, or opal glitter of their wonderful eyes.—(to R. STALKER, Glasgow.)

November Wasps.—Yes, it is unusual to be annoyed and stung by wasps so late as November 2nd; because it is seldom that October passes without a frost sharp enough to put an end to the wasps' nests of the year and send the fertile female wasps into their winter quarters. But this has been an exceptional year in many ways.—(to F. HOLMAN, Hastings.)

Luminous Wood.—Decayed wood is often highly luminous owing to the growth of certain fungi. These spring from a network of root-like threads which are collectively called the mycelium; and, while growth is proceeding actively, this shines at night with a light which varies in tint in different kinds of fungi. As the wood dries and the fungus-growth becomes inactive, the light dies away.—(to J. F. STUART, Bideford.)

Shooting Guinea Fowls.—It is not unusual, in Norfolk at any rate, to shoot guinea fowl for market when they are roosting in trees. This is the easiest way to secure them.—(to J. F. SIMMS, Portsmouth.)

A Cat's Lost Whiskers.—Yes, the whiskers will grow again. It is said that a cat whose whiskers are cut off is unable—or unwilling—to pursue and catch rats and mice. I do not, however, think that a tame and well-fed cat minds the loss.—(to J. B. GURNETT.)

A Homing Snake?—No, I do not think that your tame snake, which you released outside the town and which was killed a quarter of a mile nearer to its old home was making its way back. It simply chose an unfortunate direction in which to travel—towards the houses instead of away from them.—(to L. M. CURTIS, Holbeach.)

Plague of Ants.—By this time, no doubt, the nuisance of the swarms of small red ants is moderated; but in any case you should be able to discover the holes leading to the nests, or at least the cracks through which they issue. Paraffin applied judiciously and repeatedly with a feather will generally close the route to them.—(to N. W. JUDGE.)

The Old Black Rat.—It is generally believed that the old black rat was exterminated by the brown rat; but in Yarmouth at the present day the black rats are still numerous enough,

and certainly seem able to hold their own against the brown rats, if indeed they are not spreading.—(to J. F. SIMMS, Portsmouth.)

Chameleon.—These reptiles are not intelligent in the sense you mean and we have not known an instance where they have recognised their owner from other persons. Keep in a glass fern-case by itself placed in a very warm room or conservatory; it must not be allowed to get damp as this is fatal to these reptiles. Feed on mealworms, cockroaches, and flies. Drink may be provided by wetting some fern fronds or leaves of some kind in water and afterwards placing in a saucer. The case must contain some growing plants strong enough for the chameleon to climb upon.—(to THORPE, Walthamstow.)

Little Grebe in a Town Street.—It is not unusual when stormy weather occurs at migration time for weak-winged water birds, such as the little grebe and the water rail, to be picked up in towns. At such times all water birds and waders seem especially liable to be attracted at night by the lights of towns—possibly mistaking them for the shimmer of moonlight on water; and birds with weak flight, like the little grebe, cannot always get away again.—(to M. T. NEWMAN, Luton, Beds.)

"Creature in a Water-butt."—The "curious creature found in a rainwater butt, having a grey body somewhat the shape of a bolster with a long tail and a curious resemblance to a miniature rat without head or legs, its greatest length about $\frac{1}{2}$ -inch body and $\frac{1}{2}$ -inch tail," is the rat-tailed maggot, which produces the drone fly—that large, brown buzzing fly which gets into the house in autumn and looks so like a bee. The presence of the rat-tailed maggots in the water-butt shows that the water is putrefying; for the drone fly is to bad water what the blue-bottle is to bad meat.—(to G. HOOPER, Lindfield, Sussex.)

The Jackdaw's Bath.—By all means let your jackdaw have his bath all through the winter. You have only to note how eagerly wild starlings and sparrows take advantage of the ice being broken on a horsepond in order to bathe, to realise that cold water has no terrors for birds.—(to W. MOSLAND, Bromley.)

Ailing Thrush.—Your thrush, which has appeared ragged and in ill-health since its moult, has not moulted properly, and although you do not say how it is fed, the constipation indicates that its diet is not of the best. It is not old enough to be decrepit at five years. Keep it fairly warm, not too warm; free from draughts; and give as much Epsom salts and chlorate of potash as will lie on a sixpence in its drinking water every second day for a week, and on the alternate days fifteen drops of syrup of phosphate. After the first week give the former only twice a week, but continue the syrup every second day for two or three weeks. Feed on two parts bread crumbs, one part each of preserved yolk of egg, and ants' eggs, as many insects as procurable, a scrap of green food daily, and plenty of gritty sand in its cage.—(to Mrs. E. LEWIS, Maidenhead.)

"Pink Herons."—There are no such birds as "pink herons" anywhere; indeed, there is no member of the heron family which has any pink feathers. In an allied family, however, we find the Roseate Spoonbill and the Scarlet Ibis, both from Tropical America; the former is naturally pink, and the latter degenerates from scarlet into salmon-colour in captivity. They are wading and tree-building birds like herons, and feed on small animal life, but are more active than herons, and have very different beaks.—(to Miss ALICE FOALE.)

Winter Carnations.—The first open show of the Winter Flowering Carnation Society will be held on December 4th. Mr. Hayward Mathias, Royal Botanic Gardens, Regent's Park, London, W., is the hon. secretary.

B.E.N.A.

B.E.N.A. Badge.—The large number of members who have written to inquire the cost of the badge or to ask that one may be reserved for them will find an announcement under this heading so soon as the arrangements for the manufacture and distribution of the badge have been completed. I did not think it wise to proceed with this until members at large had had time to consider and criticise my design for it. One never knows what error or defect may be discovered in one's work, and when this is already cast in metal discovery is too late for remedy.

B.E.N.A. Branches.—Our local secretaries are gradually defining the limits of their districts, and readers living at any of the places mentioned below and desirous of joining the B.E.N.A. are invited to communicate with the secretary of the district:—

Cheshire: For Wallasey, Liscard, Seacombe, Poulton, Egremont and New Brighton, the local hon. secretary is Mr. Percy C. Brown, Eversley, 87, Sea Bank Road, Liscard, who will be glad to hear from new members.

Gloucestershire: For the Gloucester district, Dr. W. Hodges, M.R.C.S., L.R.C.P., etc., 38, Park Road, Gloucester, is the local hon. secretary.

Hampshire: For Southampton, Shirley, Freemantle, Nursling, Rownhams, Chirworth, Basset, Highfield, Millbrooke and Bitterne the local hon. secretary is Miss Olive Stuart Menteth, Rownhams Mount, near Southampton.

Kent: For Chatham, Gillingham, Rochester, Strood, and the villages of Cobham, Bredhurst, Hempstead, and Rainham, the local hon. secretary is Mr. Benjamin J. Williams, Millstrood Villa, Imperial Road, Gillingham.

For Tunbridge Wells, Cranbrook, Tonbridge, Crowborough, with the villages Southborough, Hadlow, Frant, East Reekham, etc., the local hon. secretary is Mr. A. Holmes Baker, 46, St. James's Park, Tunbridge Wells.

For Edenbridge, Crockhamhill, Marsh Green, Four Elms, Hever, Markbeech, and Cowden, the local hon. secretary is the Rev. D. Smith, Edenbridge.

Lancashire: For Bury, Pothington, Ramsbottom, Whitefield, and Radcliffe the local hon. secretary is Mr. Hubert Lord, 85, Lily Hill Street, Whitefield, and he will be glad to hear from new members.

For Bolton, Horwich, Turton, Darwen, Belmont, Farnworth, Stonesclough, Kersley, Little Hulton, Middle Hulton, Lostock, Walkden, Worsley, Pendlebury, Atherton, Leigh, and Tyldesley the local hon. secretary is Mr. James W. Mercer, 611, Chorley Old Road, Bolton.

Humorous situations occasionally result from the enthusiasm which is reciprocated between the headquarters of the B.E.N.A. and its distant branches—though, perhaps, "twigs" would be a description more appropriate to the size of some of them. "With reference to your request," writes the Ulverston secretary, "that I would see local members, re forming a branch, there is only one other member within fifteen miles; so at present we are letting the matter rest." But he goes on to say that, as there is no other natural history society of any kind in the neighbourhood he is "looking up all likely new members and hopes to form a branch before long." So we may see something of this twig's growth soon.

London, S.W.—For the present, the whole of the S.W. district of London proper, including such localities as Earl's Court, S. Kensington, Brompton, Fulham, Parson's Green, etc., etc., but not including outlying suburbs, such as Wimbledon, Putney, Richmond, etc., is under the charge of Mr. A. E. Hick, 4, Purser's Cross Road, Fulham, S.W.

Sussex: For Chichester, Emsworth, and neighbourhood, the Rev. W. S. Wyle, Rhinemoor, Victoria Road, Emsworth, is the local hon. secretary, and he will be glad to hear from new members.

"DAILY MAIL"
The Naturalist's Daily Newspaper.

(Continued on the next page.)

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 82. VOL. 4

DECEMBER 8, 1906.

1d. WEEKLY.

Migration Notes from Australia.

By CYRIL GRANT LANE.

LATELY took up a position in the lagoon-country of Victoria, Australia, netted with water-ways and reed-belts partially submerged, with a view to study migratory birds. In many parts the dark ranges hem in the water-ways on either side and influenced, I presume, by the gleaming of the water, of which the upper Goulbourn forms the principal body, some migratory birds seem, this year, to have chosen its course as their "guiding-star" to their lands.

My seat of observation was upon the banks of a big lagoon. No moon was to be seen. Stars, however, shone brightly. The dead timber—giant river-gums, for the most part, but broken monuments of their former selves—gleamed softly in the starlight. The lagoons echoed with the plaintive call-notes of various wild-fowl; otherwise it was a night devoid of sound.

The sun had not long sunk to rest in a burning mass of clouds based by the purple ranges, when a sound much like the souging of a night-wind among the range-tops attracted my attention. It increased, but not violently. Gradually it passed overhead, travelling down river, and in another moment all again was still. No call-note was uttered from above, or below. Twenty minutes later similar sounds were audible, issuing from the same direction, but louder. The sound forcibly reminded me of the distant, local storm. I am of opinion the birds were passing over in great numbers.

Seizing my rifle I fired sky-wards, and instantly caught the note of the black duck, the hoarse croak of the blue crane, and, I fancy, the singular cry of the lapwing, all issuing from the starry heights. A variety of birds had evidently joined forces in their over-land passage.

Until about 3 a.m. separate flocks winged their way across the country.

and once only, during my watch, did I hear the wild trumpeting of the black swan. Judging from the sound of its wing-beats the bird was alone. Strange to say its cry evoked the voicings of a number of water-fowl in the lagoons. Most prominent were the quacking of ducks, the shout of the Nankeen heron, croaking of cranes, and occasionally the shrill whistle of the musk-duck could be heard. Subsequent visits to the same spot revealed the fact that very few water-fowl are now to be seen in the locality. "Here to-day and gone to-morrow" is undoubtedly a migratory motto.

In a certain wild rock-bound region situate between the old Yarra track and the Goulbourn fall, I have noted that the swallow family sometimes halt to rest when migrating about the second week in March. It is a world of rock. Jagged out-crops cut great shapes against the sky, are cracked, and deeply fissured and the worse for inclement wear. Vegetation is scant, the trees stunted, the scrub tough and low-growing.

While perched one evening among the higher ledges by my camp-fire, the dusky atmosphere suddenly became full of swallows, swifts being particularly numerous. Being observant of these things I soon became aware that a large species of owl

reaped a harvest by their arrival, and doubtless other nocturnal birds of prey did likewise. Before dawn next morning every swallow had disappeared.

In February the mountain ranges are thronged with friar-birds (leather-heads), wattle-birds, and orioles; then, one night, there being undeniable signs of stormy weather, the birds take wing, for 'ere the cold, rainy change sets in, the ranges are deserted, the flowering timber no longer tempting them to prolong their stay.



[Photo.]

Jagged rocks in the Lagoon Country.

Here the Swallows halt for rest when migrating.

[Copyright.]



[Photo.]

The Writer's Camp.

On the left will be seen a temporary dark-room with a kangaroo skin upon it.

[Copyright.]

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, DECEMBER 8, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them.

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The Monkey Temple.

By E. COCKBURN REYNOLDS.

"THE gods are very simple." Here was the priest of Hanuman, with paint-pot in hand, smearing the Monkey-God with bright vermilion. In the old forgotten days, the red came from veins of a human victim, but now that life has grown more precious, red lead has to serve the purpose. The god sees no difference and is just as happy, while his priest waxes fat on the offerings of pious Hindoos.

But where are the monkeys? As I drove up in my trap in the cool, grey morn, before sunrise, I was conscious of certain shadowy forms speeding along the road before me. They could be nothing but monkeys, but now that I had reached the monkey-temple not one was in sight.

"Where are the animals?" I asked.

"Animals!" cried the priest indignantly, "the Bundar-folk are not animals, but a very wise little people, with laws and customs of their own."

I laughed and repeated "But where are they?"

"They are all here," said the priest, indicating with a wide sweep of his hand the entire foliage of the grove.

"They are indeed clever, the Bundar-log. They know when to show themselves. They were going out to loot a melon field two miles away, when the sentries came in to say you were coming, therefore they are in hiding."

"But, why?" I asked in surprise.

"For what reason does a white man come all this way from the city, but to see them? and having seen them at their gambols, he will go away satisfied, forgetting, maybe, to feed them. Ah! they are wise, my children, they know when to show themselves."

I looked up into the trees above, but not a paw or tail was visible, yet there were little noises among the leaves, like the frightened whisperings of hiding children.

"Give them a feast such as they never had," said I, and put five thin rupees into the hand of the priest. His eyes glistened at such liberality, and stepping into the open space before the temple, he gave a weird, far-reaching cry—

"Ahja! Ahja! Ahja!"

Instantly, a sound like a great wind thrashing the leaves, and monkeys in tens and twenties dropped from the branches, and hurried to get first place around the open space. And hundreds, and yet hundreds more hurried up, forming ring without ring of eager expectant faces. Surly old males, with great, muscular arms, and fierce, red blotched features; mothers with little, kitten-like babes, clinging to their fur or sitting impudently on their backs; monkeys in their first year, full of fun and mischief, who behaved like disorderly school boys and were bullied into quietness by their elders. Bathed in the early sunshine, they sat waiting impatiently the coming feast.

The priest dragged a great earthen bowl to the edge of the raised plinth and flung handfuls of soaked gram (Egyptian lentils) into the open space, till the ground was covered with it. The monkeys watched the gram as it fell, with ravenous eyes, but not one of them stretched out a paw though it lay at their very feet. I could not understand such abstinence.

"The king has not arrived," explained the priest. "None will touch a grain till Rajah Sahib has done his meal."

"Ahja! Ahja!" he cried again, and presently I discerned a huge animal stalking leisurely towards us through the shadows of the grove. It was Rajah Sahib. As he reached the outer-most ring, the crowd parted, and made a passage, down which the giant walked with slow deliberate movements. He seated himself in the middle of the ring and glanced indifferently at the food as if he saw nothing to tempt his regal appetite. After some time, he commenced to eat very slowly, picking up a few grains now and then, in a listless fashion.

A baby monkey sitting on the head of its mother in the third row looked at this prodigal supply of good food lying untouched, and, hunger proving stronger than any vague ideas of decorum it might have possessed, it sprang from back to back of those before it, plumped right down into the circle, and, in the face of the awful majesty of the king, began cramming its little mouth full of gram. Its mother gave a shriek of despair, but did not attempt to rescue it, while an ominous silence seized the assembled monkeys, who obviously expected a terrible example to be made of the culprit. The Rajah never turned his head to look at the foolhardy offender, but quietly stretched out a hind leg, and taking the youngster by the ear, held it face downward on the ground. The little thing's shrieks for mercy were most touching, yet no monkey attempted to stir from his place, and Rajah went on eating with an expression of the greatest unconcern, till having satisfied himself, he liberated the youngster, who, forgetful of all food, fled in terror to his mother and clung to her, with face hidden in her fur. The Rajah stalked off slowly as he had come and once he was outside the circle, the monkeys fell on the gram and crammed it into their pouches so fast that the entire amount of grain disappeared in a few minutes.

Seated apart was a young female monkey hugging a withered little object to her breast. I thought it was a dead bat at first, but the priest enlightened me.

"It was her first born, Sahib; a male; and they kill a large number of the young males each season, as soon as they are born. My poor lurkee she did not understand, and her grief was very great, she has carried her dead baby about with her ever since."

"But why do they kill young males?"

"It is their custom, great Sir, even as it was our custom to drown female children before your Raj prevented it. Their reason is the same, to keep down numbers, also there will be less fighting among the males to secure wives; and more wives for the older monkeys."

"How many wives is a monkey allowed?" I asked in amusement, considerably surprised at this discovery of a community with laws and customs where I had expected to find wild animals.

"The Rajah Sahib has three wives; the older monkeys have two, but generally one wife is enough for the monkey-folk. The males in their first year do not have any wives. Yes, they are very much like men, the Bundar-log. If their wives get too friendly with other males, they beat their wives, just as men do. If a male has been conquered by another, he crouches down and puts his tongue to the dust in token of submission, as some savages do.

"In the first warm days of early summer they run mad and chase each other in a wild riot of fun, just like we Hindoos do in our Hool festival, or like Europeans in their Carnival on May Day. But the Sahib laughs at me and will not believe. If he lived amongst them as I do, he also would observe these things. But they increase too fast, and I find it hard to feed them, much of their food they get by plundering the crops of the farmers, who are very patient with them, knowing it pleases the gods."

The sun was high in the heavens before I reached the cool darkened rooms of my bungalow where I spent the day trying to decide how much of what I had been told was fact, and how much was due to the imagination of an eccentric priest.

Country-Side Notes.

Warham, Norfolk.

Thou gavest me wide nature for my kingdom
* * *

The grand array of living things Thou madest

To pass before me, mad'st me know my brothers

In silent bush, in water, and in air.

Blackie's translation of "Faust."—Sent by Arthur O. Pulford.

* * *

CHRISTMAS is very near now, and I would remind readers that THE COUNTRY-SIDE stereoscopes and stereographs form an ideal Christmas present, because the pleasure of looking at the views is especially enjoyable among circles of friends such as gather in almost all houses during the holidays.

* * *

I would also point out that now is the time to make an annual subscription to THE COUNTRY-SIDE a Christmas or New Year present to friends abroad or at home. It is a form of present which awakens kind memories every week.

* * *

Several readers have sent me a cutting from the *Standard*—or the same paragraph from other papers that copied it—illustrating an apparent excess of humanitarian zeal. "Fishermen at Mablethorpe on the Lincolnshire coast," runs the statement, "have been greatly perturbed by the interference of a cruelty inspector in regard to their baiting their lines with whelks. The inspector has informed them that they are liable to be sent to prison for breaking the whelk shells in order to obtain the animals within for bait." If fishermen, who have hard work to get a living, must not break the shells of whelks for bait, would not the law similarly prevent anglers from hurting worms and gentles by putting them on hooks? Would it allow entomologists to put pins through butterflies or moths, or gardeners to injure snails? I do not, however, think that there can be any real foundation for the statements in the paragraph; and I confess that I do not know what a "cruelty inspector" is.

* * *

Correspondents have at different times drawn attention to the injury done by "Sparrow Clubs" to British wild life owing to the absurdly wide interpretation given by the farmers to the word "sparrow." The Battle Rat and Sparrow Club in Sussex, for instance, which was responsible this year for a collection of 8,800 trophies in the shape of heads and tails, is said to include greenfinches, chaffinches, yellowhammers, skylarks, and tits among the birds that ought to be destroyed as "sparrows." Since the legislature has established the principle that the bird-life of each county is a charge entrusted to the local authorities as representatives of the public, the burden of proving that the destruction of the birds mentioned is justifiable ought to rest upon the members of such clubs: otherwise local public opinion ought to make itself felt. The public has the right to demand that the wide powers given by law to farmers and cultivators to destroy birds on their land shall be exercised with reasonable regard to the public interest, and no one can surely pretend

that the public interest is served by the wholesale destruction of yellowhammers, skylarks, and tits?

* * *

Another unpleasant matter arising out of the destruction of real or imaginary "vermin" by farmers and landowners is frequently brought to my notice, in what a Hampshire correspondent describes as "the disgusting custom of slayers of 'vermin' of hanging their victims in festering festoons upon the hedges bordering public roads, lanes, and bye-paths." Most of us know some pretty country walks which are largely spoiled by the necessity at one or more points of hurrying quickly, with handkerchief to nose, past a decomposing company of rats, hedgehogs, stoats, etc. Of course, it is true that neither landowner nor farmer keeps up the land for the sake of providing the public with pleasant country walks; but I do not think that either acts wisely in offending local public opinion, when there is no need to do so. It very often happens that a short cut by the fields and woods will save half-a-mile between village and village, and the man who compels his neighbours to choose between tramping round by the road or smelling his dead rats, is not winning affection every time.

* * *

An interesting question is raised by Mr. J. A. Busck, Winchmore Hill, N., who writes:—"In the issue of October 27th you give the impression that birds will not forsake young on account of migratory instincts, but Bosworth Smith, in *Bird Life and Bird Lore*, says that this impulse of migration is stronger than parental instinct, and that birds have been known to leave a late brood of callow young. Can you throw any further light on the matter?"

* * *

In the issue of October 27th referred to I was not intending to state that migratory birds will not abandon their young in any circumstances, but was only explaining why the young of many species migrate before their parents, because while the latter (rearing second broods) "are still engaged in nursery cares they cannot, of course, yield to this tendency." Although, however, there was no intention to state a hard-and-fast rule, I do think, with all deference to Mr. Bosworth Smith, that parental instinct is of necessity much stronger in all ordinary circumstances than that of migration. The mere fact that the young birds of the year, which have as yet no parental instinct, migrate, while their parents remain, shows that the instinct which keeps the parents back is stronger in them than the instinct which takes their older children away.

* * *

Indeed, I would go further, and say that the instinct of migration remains inoperative so long as parents are able to feed themselves and their unfledged children. Note that I put "themselves" before the "children." A parent bird will not starve in the effort to feed its young. It looks after its own needs first; but so long as it can obtain sufficient food to satisfy its own hunger first and then to keep its children alive it will remain by them. It is pathetic to see how, almost every year, a solitary

pair or two of house-martins will remain under our eaves fighting hard against untoward circumstances to rear their last brood of young, often for weeks after all their comrades have departed, and long after it is really safe for them to remain.

* * *

On the other hand, of course, circumstances may arise against which it is no use for the little parent-birds to fight. You may see them sometimes in an October blizzard struggling for hours against the sleet-driving wind, hawking to and fro, to and fro, over some wind-swept, grey stretch of water in vain hope of flies. After one or two such days you may find the mud nest under the eaves abandoned, and the young ones dead or dying. But I do not think that such tragedies as this prove that the parental instinct is weaker than the instinct of migration. Too often, I believe, the parents themselves have succumbed to the pitiless weather, tossed and driven with draggled wings they know not whither, only to die. Sometimes, on the other hand, it is possible that, by being carried away at the last, they arrive in warmer regions, and so save their lives. But I do not believe that, so long as parent birds can find food enough for themselves, and their unfledged children are living, the instinct of migration becomes operative.

* * *

A Sussex reader asks whether the migration of butterflies and other insects is to be explained in the same way as that of birds. I should say certainly not. In the first place, insects do not "migrate" as birds do; for the migration of the bird is a double process, including its emigration from its birthplace after the breeding season and its return immigration thither before the next season. Insects only emigrate, and do not return, their movement resembling rather the dispersal of the seeds of plants by the wind. At the same time, it is quite possible—indeed, it is probable—that those insects which are most frequently carried oversea by the wind—such as the painted lady and clouded yellow butterflies and various kinds of hawk moths—may have acquired an instinct to fly with a wind which blows persistently. By this means the superfluity of a multiplied generation is always carried to a new region where food-plants are plentiful and multiplication proceeds faster still.

* * *

Those foreign insects, however, which come to Britain seem—with occasional exceptions, such as the Golden Ear Moth (*P. Moneta*)—to represent pure loss to the species. Our climate is unsuitable for some, and our birds are too numerous for others: so that there is never—or hardly ever—any return for the numbers which the wind brings to us in some seasons. But Britain occupies the extreme north-western corner of Europe; and, if we regard the general movements of insect-life as a sort of irregular tide dependent upon the winds, the comparatively few which come to Britain might be considered merely as the foam that flies ashore and is lost whenever the winds drive the tide high. If we could study the conditions which govern the existence of these insects

we might find that the habit of being dispersed by the wind has been extremely useful to them. The painted lady butterfly, for instance, is common in every part of the world. Perhaps, if it were not liable to dispersal and return by the winds it would be rare and local in a single country only.

In the COUNTRY-SIDE of November 10th I noticed a very interesting letter received from Mr. Henry Link, of Waterloo, Indiana, U.S.A., regarding the song of the common English sparrow; and this week I am glad to publish among our "Notes, Queries, and Correspondence" a communication from an old shoemaker in a Shoreditch slum on the subject, because it confirms my impression of the sparrow's song. "It consists of chuckling mainly, and concludes with a loud chirp," I wrote. "It is a low trill with a sharp note at the end," writes the old shoemaker. Since I wrote (expressly quoting a note made many years ago) I have been listening carefully to the crowd of sparrows which assemble in our shrubberies every afternoon; and I find that, like the starlings, they assemble to sing! To our ears the result is only a hubbub of chirping, but every cock-bird seems vocal, while the hens are silent and listen. I have quite failed, however, to recognise any individual song which fits in with either my own or the shoemaker's note. The latter is, however, almost certainly correct, because in a London street you have unequalled opportunities to study an individual sparrow's habits.

As I am constantly in receipt of letters from readers who are not able to understand how actions which appear to be "clever" or "intelligent" can be achieved by unreasoning instinct, I would draw attention to the illustration No. 4 in our Week's Wild Life to-day. This shows a puss moth cocoon which has been torn open and rifled by a tit. Although the disguise did not save this particular chrysalis, it is one of the cleverest things in the whole realm of Nature. Yet the caterpillar which made it cannot have had the faintest idea of what he was doing. The whole of his life had been spent up above among the leaves of the poplar tree. At last came the day when he was "full-fed," and he crawled from leaf to twig, from twig to branch, and branch to trunk, finally wandering about this until he discovered a crevice of a convenient size and shape for him to squeeze round in, at a height of about four or five feet from the ground.

Now, the caterpillar could not know why he did this. He had never done such a thing or seen it done before. He did not know why he should get into a crevice, still less why he should find one at the safest height—above the level of sniffing ground-vermin and below that of prying tree-haunting birds, but just where the trunk is conveniently dry and rough. It chooses, indeed, the level which is most convenient for discovery by entomologists; but entomologists are a very recent detail, and have had little influence, if any, upon the instincts of insects. So far as Nature is concerned, this puss moth caterpillar does exactly the right thing in view of what is going to happen.

And what is going to happen is more wonderful still: for that caterpillar begins to produce gummy threads from its mouth and weaves them to and fro over its back as it lies and twists in the crevice until it has made a transparent cage of gum for itself, neatly filling the crevice. Then it bites off tiny little pieces of bark in the crevice and pushes them one by one against the gum until it is completely hidden by a thin film of artificial bark, which, as the gum dries, becomes stiff and hard, and is not only flush with the surrounding bark but exactly resembles it in appearance. Now, if a human being, who knew that he would have to sleep out of doors uninterruptedly for several months, with alert and hungry enemies all around, were to hunt about until he could find a suitable hollow tree and, working from inside, so cover up the entrance that it could not be distinguished from a natural continuation of the tree's bark, we should very rightly regard his conduct as remarkably clever and intelligent.

But it is no unfairness of judgment which compels us to deny these qualities to the caterpillar—or any other animal in similar circumstances—because this has no basis of knowledge on which its intelligence could work. It does not even know what it is doing—much less why it does so—because it has no opportunity to look at its completed cocoon. It has imprisoned itself first of all in a cage of silken gum, and cannot have any notion that the little bits of bark which it bites off and sticks into the gum will give the appearance of solid bark to the outside of the gum when dry.

E. Kay Robinson.

An Interlude.

Far away, grim cities frown:
Here, a trout-stream flings adown
Sheer gray rocks its waters brown,
And the water-pixies play
With the mermaids in the spray,
Whilst the rush and swish and sigh
Of the breakers' lullaby
Ever whispers: "Peace, ah peace;
From your burdens find release;
Hush! Ah! let your murmurs cease."

Far away, the fume and fret
Of the life with duties set,
And the bonds that chafe us yet:—
On this wild and rock-bound shore
Where the green waves curve and roar,
Nature meets us face to face,
Gives the soul some breathing space.
"Hush," she whispers, "be at rest;
Lay your sorrows on my breast;
Know God's ruling is the best."

Then, a truce to grief and care!
Sea and sky and light and air
Claim us with their visions fair;
Sunset glories, opal seas
Paint us golden memories;
Wide our outlook; clear and sane
Grows once more the weary brain,
Whilst the breakers whisper: "Peace,
From your burdens find release,
Hush . . . ah, let your murmurs cease."

MABEL E. WORSFOLD.

B.E.N.A.

(British Empire Naturalists' Association.)

Affiliated Societies.—Several secretaries of Natural History Societies having written to inquire the terms on which clubs and societies are affiliated to the B.E.N.A., the following statement may usefully be published:—

The affiliated society comes under no obligation, pecuniary or otherwise; but it will have the privilege of being represented on the platform at all B.E.N.A. meetings by two representatives, the secretary and one other delegated member.

Its members will be admitted to all B.E.N.A. gatherings, excursions, etc., on the same conditions as ordinary members of the B.E.N.A.

When travelling or on a holiday its members will be honorary members of the local branch of the B.E.N.A. in the district which they are visiting.

They will also be able to participate in the various advantages of the B.E.N.A., such as the distribution of specimens, the purchase of goods at reduced rates, etc., etc., provided that their names have been sent up by their secretary to be added to the B.E.N.A. list.

In return it is hoped that the affiliated society will further the aims and objects of the B.E.N.A., and will discuss and vote upon such matters as the B.E.N.A. may from time to time submit for consideration by the society.

Lastly, the society will, of course, extend the courtesy of honorary membership to other members of the B.E.N.A. travelling or visiting the district on a holiday.

Identification of Specimens.—*Wild plants*—including grasses and sedges—found in Lancashire, will be identified by Mr. John Moss, Rose Cottage, St. Michael's-on-Wyre, Garstang, Lancs. Irish plants found in Co. Kilkenny will be identified by Mr. M. D. Haviland, Norlands, Thomastown, Co. Kilkenny, Ireland. *Zoological specimens* found in Shropshire and vertebrates of North Wales will be identified by Mr. H. C. Forrest, Bayston Hill, Shrewsbury. (Members sending local specimens of real interest to Mr. Forrest will be adding to a valuable scientific record, which he has maintained for years. Ed.) *Birds*.—

Mr. J. H. Armstrong, 98, William Street, Coundon Grange, Bishop Auckland, will be glad to help in this department. Mr. E. R. Paton, Brookdale, Grossendale, Liverpool, will identify birds or eggs for any member in that district. *General Natural History*.—Mr. James Mercer, 611, Chorley Old Road, Bolton, will be pleased to identify specimens and answer questions for any part of Lancashire.

Town and Country Schools Mutual Aid.—As stated on November 17th, arrangements will have to be made to secure funds for the postage of the fortnightly parcels of natural history specimens collected by country schools for the benefit of the town schools linked to them for the purpose of mutual aid, and for whatever town schools will send in return. Meanwhile, however, the Hon. Cordelia Leigh has generously undertaken to defray the expenses connected with the scheme so far as two country schools and two town schools are concerned; and if any other readers who are interested in the welfare of particular schools, either in town or country, would similarly undertake to pay the postage—probably amounting to less than 12s. a year—in their case, we might see the experiment inaugurated in many parts of the country, without waiting for the small Government grant which would doubtless be forthcoming when the utility of the scheme has been made manifest.

Free Distribution of "The Country-Side."—In the Ulverston district of Lancashire Mr. H. B. Turney will be glad to distribute spare copies. Miss Grace Morley, Headmistress, Wesleyan School, St. Erth, Hayle, Cornwall, will be very pleased to receive spare or old copies to distribute.

[A number of announcements unavoidably held over for want of space.—Ed.]

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Do Skylarks Avoid Valleys?—Sir,—I would like to know if any reader of THE COUNTRY-SIDE has heard the sky-lark singing in any narrow valley (say about a quarter of a mile wide) with high hills on each side? I have lived in this valley (Corris) for thirty years and have never heard a lark singing in it, though they are plentiful and often heard on the hills adjoining.—Yours, etc., (Rev.) R. J. EDWARDS, The Vicarage, Corris. [I have noticed in Devonshire that sky-larks are rare in the valleys.—ED.]

Lizards' Eggs.—Sir,—Referring to the Editorial note on this subject in THE COUNTRY-SIDE for October 27th, 1906, there can be no doubt as to the identity of my lizard. Dr. Gerald Leighton saw it and confirmed my opinion that it was a female *L. vivipara*.—Yours, etc., JOHN R. B. MASEFIELD, Rosehill, Cheadle, Staffordshire. [Dr. Leighton's authority is, of course, conclusive. Therefore there is no doubt that the common lizard, *L. vivipara*, is not always viviparous, i.e., does not always produce young but lays eggs sometimes.—Ed.]

Noises of Butterflies and Moths.—Sir,—The knife-like sound made by the Feathered Gothic moth at rest is interesting, the Silver Lines (*prasinana*) cries like a bat when flying, and in both cases I imagine the sound is made by the crumpling of the fore wing. When the fore wing of the first moth is seized and rubbed on the hinder there is certainly a click, and both moths have a raised pucker in the fore wing under the central vein that ends abruptly.—Yours, etc., A. H. SWINTON, Vineyard, Totnes.

Brer Fox—and his Tail.—Sir,—The account of a tame fox in your splendid Special Winter Number is very charming, but how much more appropriate would have been the writer's "Uncle Remus" allusion had it been correct in quotation. It was "Brer Fox" who "lay low"—just as his prototype is described as doing among the asparagus—and, on a famous occasion, waited "to see what de news was gwine ter be." It is strange how many people make the mistake of quoting Brer Rabbit as the individual who "lay low," I have come across it repeatedly. One thing unmentioned by "Vixen's" biographer would be interesting to know, viz:—Did "Vixen" wag her tail when pleased? I have in my time known two tame foxes (I distinguish tame from captives in dealer's cages), but cannot be certain whether they, like dogs, wagged their tails when pleased.—Yours, etc., J. B. WALTHAM, Granville Park, Aughton, near Ormskirk.

Raven Lore.—Sir,—I must thank your correspondent, Mr. Hay, for his kind remarks anent my article on the raven. But may I point out to him that, in a short article, it is manifestly impossible to enter into minute details. Possibly I should have put "usually three miles at least separate two eyries" or "on an average." For such is the case; and sometimes many more intervene between two tenanted eyries. On the other hand I have met with instances where two ravens tenanted nests which were within three-quarters of a mile of each other. But it is certainly not of usual occurrence. And the same with the Penguin. I know one cliff where two tenanted eyries exist annually within half a mile.—Yours, etc., JOHN WALPOLE BOND.

Great Cluster of Nuts.—Sir,—I enclose photo of a remarkable cluster of nuts pulled in the wood, Old Parks, Kirkoswald. The



Photo

Hazel Nuts.

[E. Scott.

Twenty-six nuts in a single cluster.

number of nuts on the cluster is 26. The photo is by Mr. E. Scott, Observer Office, Penrith. Has any reader known so large a cluster?—Yours, etc., GEORGE SLEE, Glassonby, Kirkoswald.

A Six-Toed Kitten.—Sir,—I noticed with interest the drawings of a kitten's curious paws on page 349 of THE COUNTRY-SIDE for November 10. Accompanying this is a photograph of one of the six-toed cats of Magdalen College, Cambridge. Nobody seems to know exactly how these cats originated, but tradition is that long ago (the period is put vaguely at fifty or a hundred years) one six-toed female cat turned up at Magdalen from none knew where, and from her sprang a race inheriting her peculiarity. At all events for some generations Magdalen has been well furnished with cats (as a matter of fact the College simply teams with cats) and all six-toed. Possibly some one may be able to tell you more about the origin of the breed



Photo.]

A Six-toed Kitten.

[Stearn.

This is one of the six-toed cats of Magdalen College, whose origin is wrapped in mystery.

than I have been able to ascertain.—Yours, etc., H. P. R., Little Shelford, Cambs.

The Sparrow's Song.—Sir,—Living and working, as I do, alone in a Shoreditch slum, I have plenty of leisure to watch the sparrows and I can assure you that some of them do sing. It is a low trill with a sharp note at the end, totally unlike their chirping or "Jem Jem" note. Thanking you for the pleasure the C.S. has given me from the first number,—Yours, etc., AN OLD SHOEMAKER, John Street, Hackney Road, N.E.

Nesting of Sparrow-Hawk.—Sir,—Your correspondent's (Mr. Morris, Sedberg, Yorks.) remarks on this hawk's nesting economy are, if I may say so, splendid. He is an observer I should very much like to meet. But as to Mr. Unwin's quotations from various sources, Mr. Pike delicately avoids the point (from a personal point of view) as to crow's and other bird's nests being appropriated, though he does say "generally built by the hawks themselves." And as to Mr. Westell's remarks, I should much like to know how many sparrow-hawk's nests he has seen "in bushes, in rocks and sea-cliffs."

It is perfectly true that the sparrow-hawk does appropriate other bird's nests (generally old birds) but it always adds a nest of its own building to the already existing structure. I do not know how many sparrow-hawk's nests Messrs. Kearton, Pike and Westell have personally examined, but your correspondent, Mr. Morris, has examined two hundred at least. My friend, Mr. Gilroy—as fine a field naturalist as Great Britain can show—has seen quite that number, if not more, and I can answer for some six score nests. Therefore, out of, say, five hundred and fifty nests examined by three people, not one solitary instance has occurred where the sparrow-hawk has laid its eggs in the nest of some other bird, without adding its own nest to it. It would give me great satisfaction if a genuine record by a reliable field ornithologist could be produced of this hawk doing anything but making its own home. I have known the sparrow-hawk erect a new nest in twenty-four hours.—Yours, etc., JOHN WALPOLE BOND.

Heron Swallowing 2 lb. Trout?—Sir,—I remember finding a heron once which had been choked in attempting to swallow a pike which was certainly not more than 1 1/2 lb. I should think trout would be thicker than pike.—Yours, etc., A. S. JOYCE, Beckenham.

Self-Strangled Birds.—Sir,—Seeing in THE COUNTRY-SIDE, November 24th, a suggestion by Mr. L. M. Curtis, concerning the strange deaths of greenfinches, I may say that the attempt to reach the oil gland does seem to be one of the causes by which the greenfinch as well as other birds sometimes get the head so fixed between the wing feathers as to strangle themselves. I recall the death of a cock brown linnet that I possessed last year. While he was endeavouring to reach the oil-gland, or was putting a feather in place on his back (I could not say which)—it happened in a couple of seconds—I had hardly turned my back when I fancied I heard a faint squeak, and looking at my birds, found to my surprise this linnet on the cage floor dead with its head firmly fixed in its wing. Again only last week I found a case similar to the linnet's, for a chaffinch that had been in my possession for nearly four years had got its head fixed in the same way under its wing. So you see that it is not only the greenfinch that this disaster occurs to.—Yours, etc., AN INTERESTED READER.

Cat and Train.—Sir,—A friend living close to the main L. and S. W. Railway has a cat which sometimes lies on the track close to the rails while a train is dashing past and when the rush of air caused by the train has driven a small bird down on the track, the cat seizes it before it can recover itself.—Yours, etc., J. R. HARDING.

Colour of the Sparrow's "Bib."—Sir,—As a boy and also later I have frequently noticed the patch being of a reddish brown colour, or more properly a dark chocolate. By "frequently" I mean it occurred frequently enough to cause no particular surprise as it would do if rare. Every winter a good number are destroyed here as they do so much damage in the spring.—Yours, etc., HERBERT C. HAWKINS, "Pembury," S. Godstone.

Cats with Extra Toes.—Sir,—Your correspondent on "A many toed kitten" has made the common mistake with regard to cats. Sketch No. 3 is not normal, there being one toe too many.—Yours, etc., MORRIS HARDING, Maida Hill.

Robin Eating Fungus.—Sir,—A few days ago a friend and I were out on a nature jaunt. We stopped under a tree for lunch, and while sitting there were much interested in the antics of a robin. He came and perched on a fallen branch a few feet away, beside a little group of the wrinkle-twig *Clavaria (C. rugosa)*; my companion threw him a piece of bread, which he looked at with his characteristic sidelong glance, and then helped himself to a beakful of the wrinkle-twig. An examination of the other wrinkle-twig about seemed to show that he is in the habit of eating this fungus, as many of them were broken off. This incident seems to suggest an interesting line of enquiry, namely—What wild creatures eat fungi; and what species they favour? I know that squirrels eat the edible and satanic boleti, the latter a reputed poisonous species. I believe hedgehogs also eat fungi and am told that pheasants sometimes do.—Yours, etc., A. H. THOMPSON, Aberderyn, Ruabon.

Sight and Hearing of the Mole.—Sir,—I see in No. 79 of THE COUNTRY-SIDE, page 20, under the "Week's Wild Life," etc., No. 7, there is the following:—"No doubt all this variation is rendered possible because the mole lives in the dark, and, when adult, seems practically blind." What happens is that before it is born the mole's eye is well developed; but soon after birth the bones of the skull begin to change and the openings through which the nerves of the eye should reach the brain disappear. Then the eyeball and its connections become atrophied to the condition of a small black speck, containing disorganised granular matter. There is, however, a very important question connected with this change, viz., the singular development of the sense of hearing in the mole, as exhibited in the structure of the tympanum, etc., on which the sense of hearing depends; and the way in which the development of one sense compensates for the loss, or partial loss, of another, is one of the most interesting subjects in the science of Comparative Anatomy.—Yours, etc., ROBERT LEE, M.D., etc., Pwllheli, N. Wales.

Strange Conduct of Mice.—Sir,—One morning recently, on coming downstairs, I was surprised to hear a most violent squeaking

proceeding from the cellar. So loud was it that I was quite convinced rats were causing the commotion. Arming myself with a hammer I found no difficulty in locating the enemy as the squeaking continued; but what was my surprise to find two large mice sitting up, *vis-à-vis*, by the side of a nest partly completed, apparently completely unconcerned by my presence, and the lighted candle held down to within a few inches of them. I hesitated for a minute or two to strike the fatal blow, curious to watch developments, but as nothing further happened I commenced business. Then again a strange thing occurred. After killing one of the mice by a blow from the hammer the remaining one continued to sit and squeak exactly as before, until it met the fate of its fellow. I should be glad to know your opinion of what was happening to make them so oblivious of danger.—Yours, etc., ALBERT HILLMAN, Hailsham. [It was evidently, I should say, a case of an interrupted duel between two male mice. The survivor—by half a minute or so—was probably too dazzled by the candle light to understand what had happened to his late enemy and was likely to happen to himself.—Ed.]

"Herons Mobbed by Crow Birds."—Sir,—Mr. Shelley in THE COUNTRY-SIDE of 10th ult. states that he knows a rookery in the heart of which the heron nests. May I put forward the theory that once certain birds, naturally antagonistic, nest near one another a truce is established. In this connection I have heard that ravens will travel considerable distances for food rather than touch the eggs of birds which have built near to them.—Yours, etc., J. A. BUSCK, Winchmore Hill. [Powerful birds often tolerate the presence of weaker neighbours; but it would be interesting to know whether the mobbing of herons by rooks occurs only in certain seasons and circumstances.—Ed.]

The Dublin Bay Prawn.—The Dublin Bay prawn, *Nephrops norvegicus*, known also as the Norway lobster, is much more common

The Instinct of Migration?—Sir,—Domestic fowls seem to have the migratory instinct in a small degree. At this season they become restless—perching on their houses and in the trees, and flying down to the paths outside their runs.—Yours, etc., CHAMELEON.

A Dog's Fore-knowledge.—Sir,—In THE COUNTRY-SIDE November 17th, 1906, re "Some Dogs of the Day," Mrs. Stannard Robinson has made a statement which has interested me, for it exactly confirms my own experience in respect to my own dog.

She refers to our Queen's "Plumpy" knowing the day on which his mistress was returning from her travels and proceeding to the house to receive her, as it were.

I have a dog which was left at home last year during our fortnight's absence in Norway. A woman used to come in every morning to see that the house was in order and let the dog out for a short run sometimes. During that time "Nelly" (the dog) ate and drank very little, and when my next door neighbour petted it and made a fuss of it, there was no response at all and she walked about in a very dejected state, until the day that we returned. That morning, about six hours before we returned, she went next door and scratched away until it was opened by the landlady, who, seeing that the dog was wagging her tail and was barking and jumping about most excitedly, said to her, "Hello Nelly; is your master coming home?" which set her off again. After that she was incessantly going up and down stairs and looking out of the first floor window, until the cab with the luggage on top heralded our approach, then she came downstairs and was on the doorstep when we arrived. Until I read THE COUNTRY-SIDE of this week I had never heard or read of any similar case.

That there are occult influences at work, undreamt of in our philosophy, I feel quite confident and have so felt for a good many years. The widely accepted theory that "coincidence" is the explanation does not meet all the cases of phenomena that occur.

Yours, etc., J. A., Heve Hill, S.E. [I do not think we need introduce occult influences to account for occurrences of this kind. Animals are very quick indeed to notice little indications of change; and no doubt a dog guesses that its owner is returning from some of the preparations which are being made.—Ed.]

A Wood Pigeon's "Swallow."—Sir,—On Saturday I shot a young wood pigeon flying at a considerable height. It came down very heavily and, on picking it up, I found the crop had been burst by the fall and one acorn had escaped. Inside the damaged crop were still two other acorns, the larger of which measured $1\frac{1}{2}$ inch by $\frac{3}{4}$ inch. I have noticed in one of your issues that oak trees growing in curious places may have originated through acorns being dropped by birds, but what interested me most was the immense muscular power which this bird must have possessed in its gullet to pass such a large body down into the crop. Yours, etc., P. KINMONT, F.R.C.S., Newark-on-Trent.

Early Maternity.—Sir,—I have a guinea-pig which is only two months old and is the mother of six young ones. Wishing your wonderful paper every success,—Yours, etc., H. JAMES, Queen Street, Cardiff



[*holo.*]

The Dublin Bay Prawn.

[T. Eveleigh.]

It is also known as the Norway Lobster, and is more common on our coasts than is generally supposed.

off our shores than is generally supposed: especially in certain localities off the Scottish coast, and in Dublin Bay—hence the name "Dublin Bay Prawn"; but it is to be found only in deep water. Beautiful, both in form and colouring, it is yet more remarkable on account of the extraordinary form of the "telson" or tail-fin of the "second laval-stage," which is produced on each side into a pair of enormous spines closely beset with bristles. The specimen which formed the subject of this photograph, measured one foot in length from the top of the claw to the tail.

Profitable Poultry Culture.

By "CHANTICLEER."

Popularity of Wyandottes.

THE great Crystal Palace Show recently held has established a record in poultry exhibitions, for no fewer than 5,500 birds of all breeds and varieties were penned, the quality and conditions being very conspicuous.

Needless to state, the cream of the fancy was present and champion prize winners were much admired.

The popular Orpington breed was represented by 215 Blacks, 300 Buffs, and 128 Whites, but the palm must be given to the Wyandotte, of which 752 handsome specimens faced the judges—convincing evidence of their increasing popularity.

The Gold and Silver breeds seem to be declining, but the White, owing doubtless to its well-known utility properties, holds its own. The rich coloured handsome Partridge Wyandotte is rapidly increasing in favour.

These obtained publicity some two years since when a winning cockerel changed hands for £165, but at this Palace Show the cup winning bird was sold for £100, whilst several birds were purchased at £40 and £50.

Their immense size, brilliancy of plumage, lovely striping or marking, together with their adaptability for exhibition and wonderful utility properties make the Partridge an ideal fowl for which our American poultry fanciers are to be praised, for the Wyandotte breed generally was manufactured in the States, although I must particularly point out that the 'Dotte, when first imported, was a very different fowl from that exhibited in Great Britain to-day owing to the skill and perseverance of English fanciers.

Value of Clover for Poultry.

It is surprising how few poultry keepers realise the high nutritive properties and feeding value of clover for poultry. If it were more generally recognised much benefit would be obtained, for it can be purchased at a low cost, and its intrinsic value as an egg producer and fertilising food cannot be overestimated, for it not only balances the ration, but is rich in lime, salts, protein, carbohydrates, and fat.

Clover has for its most valuable constituent protein, the flesh and muscle-former. An analysis shows that the average crop of clover contains over 13 per cent. of protein, 43 per cent. of carbohydrates, and 4.9 per cent. of fat. It is in the depth of winter that clover is so invaluable to poultry keepers, who will find the best way is to have it cut up into short lengths and scalded in pans or vessels overnight, being well mixed with other foods in the morning.

I have found that where clover has been given in this manner that not only have eggs been exceptionally plentiful in mid-winter, but the quality of the yolk has been much richer with greater fertility in the breeding pens.

Facts about mating Poultry Pens.

The wise poultry breeder commences to mate up his pens of birds to breed next year's stock about the end of the year, November or December, whilst January is not too late, and if success is to be assured it is well to exercise the greatest care in so doing, and for the encouragement of young beginners and those whose means are limited even a flock of mediocre or seeming wastrel fowls can be wonderfully improved by the purchase of a good cockerel, which, during the present month, can be bought for 5s. to £2 2s. Money spent in this way, if the strain will stand investigation, is a capital outlay, for we must consider that with increasing knowledge and education of the pros and cons of poultry keeping, the breeder who can boast of a fairly good bred flock of fowls will be far in front of the haphazard poultry keeper, and my experience teaches me that the demand for typical poultry is rapidly on the increase.

Never then mate together birds which

possess the same faults, and keep within the same strain as much as possible. Mate up freely chickens to their sire, or even grandsire, their mother, or their grandmother, but on no account mate together brother and sister. All hens should be mated up to a vigorous cockerel and pullets to a good healthy cock, and here I would state that it is generally found that strong vigorous pullets when sired by an old male bird, say, two or three years of age, will breed a preponderance of pullets.

"Dead in shell" is invariably due to want of age on one side, the germ not being sufficiently strong to incubate.

Give all breeding pens good nourishing food and a sufficiency of soft biscuit meal, and, above all, keep the birds in a vigorous condition by plenty of scratching exercise and a sheltered position when winter's blast is on them.

Scarcity of Eggs.

Many of my readers will be doubtless complaining of the scarcity of eggs this autumn, which is mainly due to the pullets having hardly started and the hens being in the last or finishing stages of their moult, and here a little practical advice will be useful, especially as regards the hens, who for the past few months have been resting whilst they changed their plumage. This is naturally a great strain on the fowl's system, but they often put on fat at this period of their existence which hinders egg production.

The best remedy in such cases is feeding sparingly of soft food for a few weeks, giving small wheat scattered in loose litter of chaff, etc., overnight, well raking it in so that the hens have to work to find it, whilst three times a week add one good teaspoonful of best Epsom salts to each half pint of water the birds have to drink, and see that they have plenty of green food for the mid-day meal.

At night I strongly advise one ounce of cooked lean meat per bird to be given. An excellent and cheap meat for poultry is bullocks' liver, which at a few pence per pound is very economical and can be easily chopped up.

Eggs in abundance from pullets and hens will follow this treatment, whilst I should add that when they have attained their normal condition—and egg production should follow this—there is no better food than Spratt's patent poultry meal, especially when mixed up with sharps and bran. Do not forget to keep the grit boxes well filled with good sharp flint grit, also shell-making material, such as calcined oyster shells. These important necessities are often omitted by poultry keepers with the regrettable result that the egg basket suffers.

Amateur Photography.

AMONG THE CLIFFS.

By W. Robinson Smith.

IN the nesting season of 1899 I was walking along the cliffs to the north-west of the mainland of Orkney with a rather more than usually intelligent native when we came to a little *cairn* of stones, and when I enquired of my guide the reason of a pile of stones hanging almost over a direct drop of over six hundred feet I was informed that here a venturesome naturalist had stepped into eternity.

Now while there are many photographs to be obtained among the ledges of our iron-bound coast, I will tender the useful advice to nature photographers not to risk their lives to get them. There are very few nests of these seawolf who find a home in the cliffs that may not be taken in absolute safety in less precarious positions.

The nest which the gentleman referred to tried to take in vain was only that of the great black-backed gull, and I happen to know that this nest was to be obtained less than a mile from where the unfortunate accident occurred in a position of absolute safety.

I know, however, that nature photographers will clamber among the cliffs so I give some advice generally on the matter. To begin with, the nature of the rock itself is important. The rock may be crumbling limestone or hard granite. The climbers, *par excellence*, among the cliffs are undoubtedly the St. Kildans and no one who has Mr. Kearton's interesting book on St. Kilda will fail to be struck with the marvellous power these islanders have acquired.

The most important hint we can get from these men is that when clambering on cliff ledges the feet should be bare.



Photo.]

[A. C. Cairns.

Cliff Photography.

Securing a Cormorants' Nest

When climbing from the bottom of a cliff upwards never forget that it is a lot easier to go up than it will be to come down, and also that if there is anyone coming up behind you or going down before you a miniature avalanche may very easily be sent down on top of him. I remember on one occasion when descending from Ben Ledi seeing an accident of this kind happen, and one of our party had a very narrow escape of having his head broken by a stone some fifteen inches in diameter which flew clean over his head.

Many accidents occur which are caused by the climber losing his balance on the edge of the cliff, caused either by a mere momentary relaxation of that vigilance always necessary at such times, or by the ground sliding down under some impetus given by the climber. The soil on cliff tops is usually more or less of a sandy or gravelly nature.

To guard against this a thin rope held by the climber and fastened securely at the top of the slope is sufficient.

Few really high cliffs present a direct descent from the summit of the cliff-top, there being a slope of an angle varying from sixty to forty-five degrees. The soil on this slope is constantly sliding down, and particularly is this apt to occur in the spring or nesting season, subsequent on the winter frosts.

Particularly also does this apply to the nesting sites of such birds as the raven, and peregrin falcon, which are often found in inland precipices and which have to be visited in the very early springtime. If the eyrie of the golden eagle is to be approached in the egg time this must be done even before the winter frosts and snows have altogether departed.

Perhaps, in my papers on trees and tree-climbing I did not give sufficient prominence to what is here of even greater importance—a steady head. Both when tree climbing and cliff scrambling, no one should risk anything who cannot absolutely depend on his nerves, and it is advisable to point out that when an accident has been more or less narrowly averted the operator's nerves will not as a rule be in a fit condition for continuing the operations on that day at least.

Next week I shall give some account of how to use the rope.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

THE little lion cubs are the great attraction at present at the Gardens, such small specimens not having been exhibited for some time. Their nearest attempt at roaring is a hoarse mew, and they are still, to some extent, "slaves of the bottle," though also receiving rations of minced meat.

There have been other desirable acquisitions to the mammalian collection of late in the shape of a female markhor (*Capra falconeri*), a gift of the President of the Society, His Grace the Duke of Bedford, and a white monkey of the African mangabey group, seemingly an albino variety.

With regard to the bird collection, it is to be noted that the apteryx has not laid an egg, in spite of press rumours to that effect; the black swans, however, have not confined themselves to eggs, but have hatched the same, and have now a healthy brood of cygnets.

There are two points of interest in connection herewith; first, that the black swan, not content with giving the lie to a classical proverb by the mere fact of its existence, insists on having a family at any and every time of the year; and secondly, that the said family so closely resemble the offspring of the white swan in their ash-coloured down that no one, to look at them, would think that the cygnets would develop such opposite colours on attaining maturity.

The new Bird House is now finished and open for inspection, and I think most people will agree that it is, on the whole, a most excellent structure, and well adapted for its purpose—the exhibition of the smaller birds—though if there had been fewer separate cages and more large enclosures adapted to the housing of groups, the aesthetic effect and scientific interest of the collection would have been more adequately considered.

The hen penguin which deserted her mate and young some time back, as mentioned in these notes, has now eggs with her second mate. It will be interesting to see if she serves him in the same way. Her first husband has died, but it seems that overmuch devotion to her offspring, rather than regret at her loss, is what is responsible for his end.

The Week's Wild Life in Pictures.

(See page 67.)

FROM a little distance a heronry in winter (1) seems scarcely different from a rookery, because there is not nearly that disparity in size of nest that the stature of the birds would suggest. But the heron, with its long legs, long neck, long bill, and huge wings, seems very much larger than he is. Like the rookery, the heronry is deserted in winter, because it would manifestly be absurd for birds to roost on cold winter nights at the windswept summits of bare trees.

2.—Here we see the goldfinch, one of the prettiest of British birds, engaged in the very useful service which he renders to the farmer, namely, devouring thistle seeds. You have only to look at a goldfinch's beak to see how admirably its very neat point is fitted to pick out the seeds. On a

winter day their musical silvery twittering almost always betrays the presence of goldfinches; and they flutter like gold-splashed butterflies from thistle to thistle. One of the very best results of the protection of birds is that the goldfinch is multiplying again near many of our towns whence the Sunday birdcatchers had almost exterminated it.

3.—Mid-winter does not seem the time to go fern gathering; but the common polypody is one of those ferns which remain bravely green in spite of frost and snow. In another way it might be regarded as the "robin" among ferns, because it seems to flourish best in man's neighbourhood on old walls and stumps and hedgebanks. It well repays a little care in cultivation, but you must be very careful in moving it not to injure the tangled fibrous roots.



Photo.]

[W. S. Berridge, F.Z.S.]

One of the Lion Cubs at the Zoo.

It is still fed largely by bottle, although receiving occasional rations of minced meat.

4.—Sharp-eyed as birds are, it is probable that the sense of touch in their bills is equally acute, and it is doubtful, therefore, whether the tit discovers the clever disguise of the puss moth chrysalis by seeing that the bark-surface is artificial or by discovering that it is hollow and yields to a peck. Whatever the cause, however, the result is equally disastrous to the chrysalis, when his woody shelter is torn open and a hungry tit makes a square winter meal of him. The illustration shows how admirably the puss-moth caterpillar imitates the bark surface; because but for the jagged rent in the cocoon it would be invisible.

5.—Among freshwater fish of ordinary outline the barbel and the carp are distinguished by possessing exactly two pairs of little appendages or "barbules" on their lips; and the carp is distinguished by its wide back fin, occupying nearly half the length of the back, whereas the barbel's narrow back fin occupies quite a little space in the middle of the back. Of all freshwater fish an old carp is the wildest;

and in waters which have been much fished the most expert anglers may see numbers of huge carp rolling and grubbing round their bait without being able to tempt them. No doubt it is this very wiliness which enables the carp always to grow to such old age and large size.

6.—The marble galls of the oak are the work of a tiny gall-wasp, called *Cynips kollari*; but I believe that no one yet knows for certain whether there are ever any males of this *Cynips*, or whether the species is always reproduced from females alone by the principle of parthenogenesis. In July you may first find these galls, which are then small and green on the stalks and veins of leaves; and most of the gall wasps come out from the ripe brown galls at the end of September. You can see the small round holes through which they emerge. Some, however, remain in the galls until the following spring.

7.—The yellow-necked mouse was only recorded as a British species, although it is not at all uncommon in some parts of England, twelve years ago by Mr. W. E. de Winton. This is the more curious because it is considerably the largest and most handsome of our British mice, its fur above being a bright tawny, clearly separated from the pure white of its under parts. Only across the lower throat and breast the tawny colour of the back spreads in a broad band, which gives the mouse its name, as shown in the picture. This handsome mouse is almost as large as a half-grown rat.

Work for the B.E.N.A.—The Hants and Sussex County Press, applauding the aims and objects of the B.E.N.A., writes:—"We have heard of some rare plant which has been seen in the locality, and which was not believed to be found, we understand, in any part of Britain other than Ireland. The Association might protect this plant and take means to cultivate it in other parts of the district and kingdom. We shall hear more of this movement, we hope, before long." The plant referred to is, of course, the variegated simethis, *S. bicolor*, concerning the preservation of which notes have already appeared in THE COUNTRY-SIDE. Next year, it is hoped, some seeds will be available for the judicious propagation of the plant in its single English locality.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

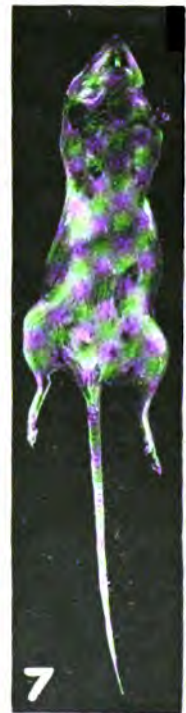
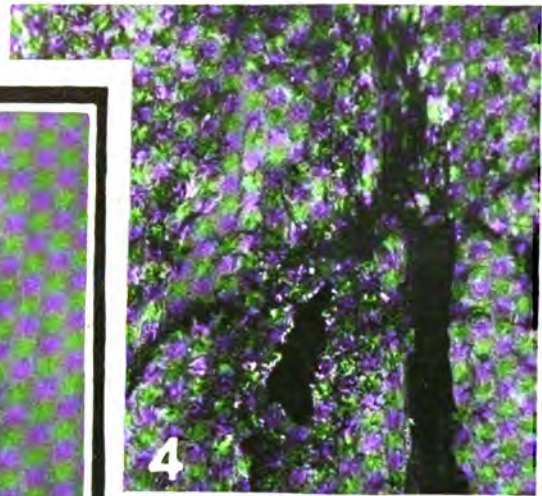
21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Pills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 66.)



1. Heronry in Winter, at Holkham, Norfolk (E. K. R.). 2. Goldfinch, *Carduelis carduelis* or *elegans* (E. F. A. Hay). 3. Common Polypody Fern, *Polypodium vulgare* (E. J. Castle). 4. Cocoon of Puss Moth, *Dicranura vinula*, broken open by a tit (G. B. Norreys). 5. Common Carp, *Cyprinus carpio* (S. and W. Johnson). 6. Marble Galls on Oak made by *Cynips kollari* (P. Collins). 7. Yellow necked Mouse, *Mus flavicollis* (G. B. Norreys).

The Garden.

Veronicas.

There are many Species, some being highly Or-
amental.

THE veronica family is a large one. It contains nearly two hundred different species and a number of hybrids. They vary in size from little creeping plants, which hardly raise themselves above the ground, to large evergreen shrubs twelve feet in height. The colour of the flower is either white, pink, or some shade of blue. Some of the shrubs are found in most gardens, and amongst those that cannot be classed as hardy are several which are very ornamental in the greenhouse, one of the handsomest being *V. dieffenbachii*.

They may easily be propagated by means of cuttings. The hardy species may be planted at any time during the autumn. Sixteen of the veronicas are natives of this country, though some are rare. The best known is the pretty little germander speedwell, *V. chamædrys*. The lines on the flowers serve as guides to the insects, which assist in fertilisation. They are a sure sign of the presence of honey.

Another native species, *V. officinalis*, has, curiously enough, some of its leaves toothed and others entire. As the object of a smooth edge seems to be to run water off quickly, and the object of a toothed edge to retain it, there is some difficulty in understanding why the same plant should want to do both things at once.

H. C. D.

Work for the Week.

December Operations.

DECEMBER is a month in which many people believe very little work can be done in the garden. As a matter of fact it should be a very busy time, if only the weather is open. In gardens where time is seized by the forelock, there is plenty of work going on; turf levelled or renewed, walks and drives set in order, borders re-arranged, herbaceous plants dug up, divided, and re-planted, trees transplanted, thinned, or filled, beds mulched with manure or dead leaves, the latter an excellent winter mulch for tender roses, hydrangeas, tritomas, lilies, and other plants that are likely to be hurt by severe frosts.

Then in the fruit ground and kitchen garden there is digging, trenching, draining, transplanting, new beds or borders to make. These operations should be got through before spring arrives; the earlier the better. The man who says there is nothing much to be done in the garden in winter knows nothing about gardening.

What to avoid.

Good gardening consists in knowing what to avoid as well as what to grow, what to keep and what to throw away, in cutting the coat according to the cloth.

Take, for instance, such plants as chrysanthemums. Most people attempt to grow too many plants and too many sorts. For a garden of ordinary size twenty sorts, or even a dozen, should be ample. There is no greater mistake than that of selecting the sorts for the garden from those shown at exhibitions. The best sorts for



Photo.]

A Handsome Veronica.

[T. Eveleigh.]

The hardy species of Veronica may be planted any time during autumn, and other ornamental species can be propagated by means of cuttings.

cultivation in pots for the decoration of the conservatory are not those that win prizes at exhibitions.

Now is the time to pass sentence on the poor in form or in colour, to pick out the good from the bad, and to banish the latter for ever. As the plants go out of flower one or two should be selected to supply cuttings, and they cannot be too well cared for. They should be cut down and placed in a frame or cool house close to the glass, where they will get plenty of light and air.

In propagating from cuttings very little artificial heat should be used. Sturdy cuttings rooted and grown cool give the best results.

Forcing.

Shrubs that have been potted and prepared for forcing must be kept in a sheltered place, the pots buried in dead leaves, and the soil, should it get dry, watered now and then. A few of each kind may

be placed at once in a temperature of about 50 degrees, and a fortnight later in one of about 60 degrees.

Such plants as lilacs, ghent, and mollis azaleas, mock orange, Japanese plums, and peaches, roses, spiræas, deutzias, and staphylæas, are suitable for this purpose. Hyacinths, tulips, daffodils, and lily of the valley if required to be in flower at Christmas time should be placed in heat at once. Camellias and white azaleas also may be subjected to a little extra heat, for although the flowers of the former are not now in much favour for personal adornment, they are very effective on the plants when placed in the conservatory.

The secret of successful forcing is in the frequent use of the syringe or sprayer instead of the watering pot. Moisture and warmth in the atmosphere are essentials, whilst a continually wet soil about the roots is most deleterious. The heat and light of the sun, what little there is in December, should be made the most of.

Dangers of "Coddling."

Cinerarias, primulas, calceolarias and carnations require all the light they can get, also plenty of air in all weathers. These plants are ruined by coddling. The leaves usually damp off when the plants have been kept close and too warm, giving the impression that exposure to draught and damp air from outside have been the cause. This is, however, a mistake.

Cyclamens require warmth now to bring on their flowers. They must be carefully examined frequently for the first appearance of aphid which is most harmful to them.

Gloire de Lorraine begonia should now be in full glory. It likes an airy position near the glass in a house where the temperature does not fall below 50 degrees. When thus treated it will flower and be attractive from December to June.

A batch of cannas should now be started. The best flowers are borne by plants grown from

stout single eyes, treated liberally in regard to manure and kept in a temperature of 60-65 degrees. Pelargoniums of the show section will need special care in watering and ventilating. They prefer a rather dry air.

A Correction.—In "The Story of The Fern," in our issue of November 17th, our contributor, S. L. B., was in error in describing the illustrations as those of *Davallia epiphylla*. They represented *Asplenium bulbiferum*, a familiar garden fern. No kind of *Davallia* has little ferns growing from the fronds, as have many kinds of *Asplenium*, including the one shown.

The Christmas card published this year by the Royal Society for the Protection of Birds, (3, Hanover Square, W.), is from the accomplished pencil of Sir F. Carruthers Gould, the cartoonist, and is entitled "The Waits." It also includes a calendar for 1907. The "waits" are the robin, thrush and blackbird; but a more appropriate Christmas trio would be robin, wren and starling.

The Garden.

Rambler Roses.

HERE are now many roses with the same habit as crimson Rambler, that is, they push up annually round the base numerous stout shoots which spread in all directions and in the second year are heavily laden with flowers. Although recommended for pergolas and pillars, they are excellent for draping the stems of old pear and apple trees, trailing over summer houses and screens, or even for the side of a road and overhanging water.

They are very strong in constitution, are not particular in regard to soil, and beyond a little thinning out of the shoots now and then, they require no attention. Their value in the villa garden has scarcely yet been recognised, but they are certain to supplant many of the common and not very satisfactory things that help to furnish the borders, walls, etc., of such places.

The best sorts are the following:—Dorothy Perkins or Lady Gay, Carmine Pillar, Crimson Rambler, Aimée Vibert, C. F. Meyer, Longworth Rambler, Reine Olga de Wurtemberg, Reve d'Or, Blush Rambler, Bennett's Seedling, Helen, Hiawatha, Alister Stella Gray, Flora, and Blairii II. Most of these can be purchased from dealers for about 1s. each.

W. W.

Garden Queries Answered.

Plantains in Lawns.—The only certain means for ridding lawns of plantains is to dig them out. There are various other means, such as putting a pinch of salt on the centre of each plant, piercing them with a skewer first dipped in carbolic acid, dropping a little petroleum from an oil can on to the crown of each; these are almost as tedious as the digging and much less certain. Engage a handy boy and furnish him with an old carving fork with which, after a little practice, he will be able to extract the plantains expeditiously. The lawn sands and other preparations said to destroy weeds without hurting the grass are not of the slightest use when the weeds are plantains, dandelions, or thistles, all of which have stout tap roots capable of starting into growth after the top has been poisoned or cut off.—(to N. K. MARTYN, Sedbergh, and others.)

Oilstoves in Planthouses.—Oilstoves or lamps are now largely used to keep frost out of planthouses and frames in winter. The fumes from the burning oil do no appreciable harm to the plants, and it is surprising how great a difference in temperature is made. We do not recommend a stove with a dish of water on the top as that would make a steam unless it were so arranged as to get hot without steaming, in which case it would do no harm. Five years ago we purchased for 16s. an oilstove for the hall; the sort of thing that is in use for heating small rooms. It was afterwards tried as a heater for a greenhouse 25 feet long and eight feet high, and it has kept frost out of this house every winter since.—(to various readers.)

Mid-December Flowers.—With the exception of Christmas roses (black hellebore), there are no outdoor flowers which you can count upon for house decoration in mid-December. Under glass, of course, there are chrysanthemums in plenty; and many kinds of South African heaths, as well as various primulas, are both beautiful and plentiful. Under glass, in fact, all the lovely flowers of the Southern hemisphere are at their best in our mid-winter.—(to H. FRANKLYN, Hyde Park.)

Keeping Plants in the Winter.—It is much better to take cuttings of geraniums than to preserve the old plants, except in the case of climbing geraniums, which have been trained over frames, etc. If, however, you wish to

keep your old plants of ordinary geraniums (pelargoniums) and have no greenhouse or attic with a large skylight, your best plan is to take them out of their soil and tie them in bundles, hanging them for the winter, roots upwards, in any cellar. Roses in pots will survive the winter in any sheltered position.—(to A. DONALDSON, Waterloo.)

Fungi on a Lawn.—The maned mushroom (*Coprinus comatus*) is a common species to be found growing in waste places, tips, and sometimes on lawns, to such an extent as to constitute a perfect nuisance, though some epicures would be glad of such a table delicacy near at hand. Of the maned mushroom, Mr. W. G. Smith says: "There is no species I should prefer before this one; it is singularly rich, tender, and delicious." The fungus quickly decays, however, into a black malodorous mass, and for table use it should be gathered when the gills are pink, and used quickly. On a lawn they are difficult to deal with, as any dressing likely to kill the fungus would also injure the grass. By gathering the mushrooms as they appear, and before they can shed their spores, the stock may be exhausted in time.—(to T. H., Durham.)

"In My Garden," published by the Lavender Press at 1s. net, is a dainty and handy memorandum book for nature lovers. Besides blank pages for notes, there are appropriate quotations for each week, with hints about gardening and table decoration. It would be a pleasant little Christmas present to send to any lady who is fond of her garden and her flowers.

"By-Paths in Nature," by Frank Stevens, published by the Religious Tract Society at 2s. 6d., contains a number of interesting chapters on the ways of insects, spiders, etc. Some of the chapters almost too closely resemble parts of "Spiderland" by Rose Haig Thomas; and some of the details are not too accurate—a criticism which applies also to some of the illustrations by Mr. F. P. Smith. In spite, however, of these blemishes and the author's tendency to credit insects with human attributes, it is an excellent book to awaken interest in certain classes of creatures, such as wasps, weevils, spiders, etc., that are generally neglected. It would be a good gift-book for young observers.

Wild Birds in Northumberland.—The Protection Order dated 17th of last month, extends the close time for all birds in Northumberland to the 11th of August, and to September 1 for the dotterel, eider duck, guillemot, gulls (except black-backed gull), oyster catcher, puffin, razorbill and tern. In the Farne Islands the eggs of the following birds are protected: Cormorant, ring dotterel, eider duck, guillemot, kittiwake gull, oyster catcher, puffin, razorbill, shag, terns; while the following are protected throughout the county:—Curlew, peregrine falcon, kestrel, kingfisher, merlin, owl (all kinds), golden plover, raven, snipe (all kinds), woodcock, golden crested wren, and (after May 1st in each year) lapwing. On Holy Island no eggs of any kind of birds are to be taken until 1912.

Our Photo. Competition.

Photographs intended for the November competition should have their titles and names and addresses of the senders written clearly on the back, and should be addressed "Camera Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in. Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (similar to that on the back page), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Variety of Wild Duck.—I should doubt your creamy-white-breasted wild duck being pure-bred. The mallard interbreeds so easily with half-bred ducks which have become wild that curious varieties are by no means uncommon, although I believe that water fowl naturally breed very true to type in all the details of their parti-coloured plumage.—(to B. N. WALE, Brewood, Stafford.)

Damage to Shot Water Fowl.—The removal of about half a cubic inch of flesh from the breast of a shot duck left on the pond all night was not due to rats, but almost certainly the work of water beetles. These insects are very voracious and swarm in such ponds as you describe, covered with duck-weed and full of water plantain.—(to B. N. WALE, Brewood, Stafford.)

Plant Identified.—The specimen which you send, taken from a shrub four or five inches high, is the Bladder Senna (*Colutea arborescens*). It is a well-known hardy shrub, which is now naturalised in some parts of Britain. There is a fine colony of it on the railway banks near Dalston Station, North London.—(to J. W. THOMAS, Cwmccarn, Crosskeys, Newport, Mon.)

A Freak Pear.—In our issue of February 3rd, 1906 (page 161), one of these curious compound pears was illustrated. They are manifestly the product of several blossoms, or of one blossom with several calyces, growing one above another.—(to W. PLANT, Broadheath.)

Migrant Birds.—Besides the swallows, etc., there are, of course, many birds which depart after the breeding season—all the warblers, nightingale, cuckoo, butcherbird, turtle dove, nightjar, etc.; but such birds as wrens, song thrushes, starlings, chaffinches, linnets, and hedge sparrows are classed as residents. Even among these birds, however, a certain amount of migration takes place, especially on the part of young birds of the year. To what extent, if any, they leave the British Isles for the winter has not been properly ascertained.—(to H. E. L. GRUNDY, Liverpool.)

Great Warty Newt and Toads.—If you notice the fungoid growth on your newts again, rub the affected part with common salt. Toads require plenty of soft garden mould into which they can burrow when so inclined and your toads and newts are probably kept on a soil which is too hard for them to excavate into; a very favourite place is the earth at the foot of a wooden fence which goes some distance into the ground, especially if it be covered with a growth of coarse herbage.—(to J. MINIHANE, Jr., Barnes, W.)

The Spindle Tree.—It is not true (1) that the spindle-tree flourishes only in Hampshire and Shropshire. (2) That Chippendale furniture is (or was) made of the wood of this tree. (3) That the tomato has been developed by cultivation from the berries of the spindle-tree.—(to H. RANDALL, Longparish, Hants.)

Treatment of Guinea-Pig.—Your guinea-pigs which have a lump forming in the lower jaw should have the parts frequently fomented with hot water and give an occasional feed of hot scalded bran and plenty of succulent green food. We surmise your feeding is not correct.—(to F. J. HILLMAN, Hornsey Rise.)

Answers to Correspondents.

(Continued from page 69.)

Grubs in Wood.—The boney-looking grubs which you find in rotten wood are those of various kinds of beetles.—(to S. A. H.)

Mortality of Bees.—Is it a fact that all the bees in Binstead, Isle of Wight, died this summer? If so, the occurrence would be worth serious investigation; and I would like to hear from some bee-keeper on the subject.—(to Miss E. F. STONE-SCOTT.)

Parasites on a Cat.—The tough, smooth, grey parasites, which you found in large numbers adhering to the head and shoulders of your Persian cat, after she had been lost for three days, were common ticks. She had probably been haunting some farm buildings lately tenanted by sheep, or something of that kind.—(to Miss E. F. STONE-SCOTT.)

To Distinguish the "Sparrows."—Often, as in your case, the difficulty arises from confusion between the names of "hedge" and "tree" sparrow. The hedge sparrow is all dark colour, with a slender beak. It is not really a sparrow at all. The tree sparrow is like a cock house sparrow, only the top of its head is all auburn colour and its face patterned with black and whitish. In our issue of March 3 we illustrated the difference between the tree sparrow and the cock house sparrow. The hedge sparrow is common everywhere in the hedges, where it slips quietly in and out with a thin piping note. Among its common names are duncock and hedge accentor.—(to H. B., Birkenhead.)

Sparrows' Fatal Fight.—It is very rarely that a fight between sparrows or any other British birds ends fatally. When this happens it is always, I think, the result of an accident. In the case which you witnessed, when two sparrows flew together on the wing and one killed the other with a single blow, it was almost certainly the force with which they met in the air that caused the beak of one to penetrate the brain of the other.—(to R. R. OVENSTONE, Duntrune, near Dundee.)

Insect Pest.—The unseen insects which attack the face especially, but other parts of the body also, at night would seem to be the common bed-bug. By thoroughly washing all the crevices of the structure of the bed with paraffin you can destroy the pest.—(to WALES.)

Age of Sheep Dogs.—Fifteen years is the outside limit of the ordinary working-life of sheep dogs; and the majority do not pass the age of ten years.—(to F. B. H. WHITE.)

Supposed Glow-worm.—It was probably a luminous centipede which you saw on October 28th at Hatherleigh, Devon. I do not think glow-worms are ever found so late in the year.—(to F. W. DOWN.)

Book on Birds.—I think that Dr. Bowdler Sharpe's "Manual of British Birds" in four small, cheap volumes is the best. The coloured plates are not particularly good, being reproductions of old drawings; but the book makes an excellent work of reference and is, or was, to be purchased very cheaply.—(to W. O'c. M., Newchurch.)

VALUE OF CURRANT BREAD.—Doctors seem agreed in advocating the use of currant bread on account of its high nutritive qualities, and the Hovis Bread Company recently offered valuable prizes to the master and foreman bakers of the United Kingdom for the best specimens of currant bread made with Hovis flour. For the masters there was a massive silver cup and for the foremen a bicycle, while gold and silver medals were offered to each class. Thousands of loaves were sent in and an interesting exhibition was held for two days in the hall of the Institute of Journalists, Tudor Street. Experts from different parts of the country formed a committee of judges and their work was not easy owing to the high quality of the bread submitted.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

EAGLE.—A specimen, probably the same one which was seen last week in North Norfolk, is now reported from East Suffolk.—(E. Ash.)

LITTLE OWL (*Athene noctua*) shot on November 7th near Stratford-on-Avon.—(J. R. Hodges.)

ROUGH-LEGGED BUZZARD shot by one of Lord Carnarvon's keepers on his Bingham estate near Carnarvon, November 22nd.

FERRUGINOUS DUCK shot by Mr. Seymour Hoare's keeper in Adlethorpe Park, near Stow-on-the-Wold.—(H. Cox.)

WAGTAIL.—Hybrid between white and pied wagtail seen near Wells, Norfolk, November 20th. Back black; face white; small black bib surrounded by white. Evidently a male in fine plumage.—(E. K. R.)

GREAT BLUE OR PACIFIC HERON.—A straggler from the arctic regions of North America shot by Mr. Sutherland, of Graemsay, Orkney, January, 1906. Note the blue black shoulder caps from which it derives its name. There



Photo.]

[C. Gibson.

Great Blue or Pacific Heron, shot in Orkney.

No other instance is on record of this bird having reached our shores.

is no other instance on record of this bird having reached our shores.—(Chas. Gibson, Newhay, Cliffe, Selby.)

GADWALL.—A pair of these ducks were known to nest at Broughton, in Peebleshire, during the last summer.—(H. R. Marshall.)

Birds on Migration.

WILD SWAN shot at Forres, Elgin, N.B., on November 5th.—(H. Magrath.) **YELLOW WAGTAILS**, multitudes seen on September 1st at Dymchurch, Kent; evidently preparing to migrate.—(E. Hoile.) **WILD DUCK**, golden eye and scamp, shot at Forres, Elgin, N.B., on November 5th and 10th.—(H. Magrath.) **SNOW BUNTING**, one at Stonehaven, N.B., October 18th, flock November 10th.—(A. D. H.) **BLUE TITS**, arrived in numbers on November 10th and 11th at Sancton, Yorks.—(E. R. Paton.) **REDWINGS**, November 25th, Cardiff.—(W. F. Bird.) November 26th Stonehaven, N.B.—(A. D. H.) **FIELDFARES**, further large arrival at Sancton, Yorks., on November 10th.—(E. R. Paton.) First arrival near Cardiff, November 4th.—(W. F. Bird.) Dulwich, November 26th.—(J. E. S. Dallas.) Stonehaven, N.B., November 26th.—(A. D. H.) **SWALLOWS**, at Stonehaven, N.B., October 14th; wind S.W.—(A. D. H.) At Wansford, Northants, October 14th.—(G. H. Lewin.) At Bray, Co. Wicklow, Ireland, on November 20th.—(B. C. Waller.) Ashford, Kent, November 21st.—(J. H. Burrows.) Near Oxford, November 26th.—(A. Lambert.) **CHIFFCHAFF**, picked up near West Drayton, November 20th, after a cold storm, and released on recovery

at Ealing.—(T. S. Fox.) **HOUSE-MARTINS**, at Hampton, Middlesex, on November 17th.—(H. O. Mills.) Near Winchester, Hants, on November 22nd.—(G. Norsworthy.) At Biggleswade, Beds., on November 13th.—(S. W.) On November 23rd at Bangor, N. Wales; wind S.W.—(H. King.) At Binstead, I.O.W., on November 18th; wind S.W.—(G. Nicholson.) Over 100 on telegraph wires at Brigstock, Northants, on October 9th.—(G. H. Lewin.)

Late Nests.

WOODPIGEONS, feeding young in nest, on November 5th, in the Tree Court, Caius College, Cambridge. Young birds flying on November 17th.—(D. G. Beckley.)

Birds' Song.

From all parts of the country, including Scotland and Wales, records come of the singing of the song thrush, missel thrush, and great tit during the latter part of November. Blackbird November 23rd near Uckfield, Sussex.—(M. M.)

Marked Birds.

BLACKBIRD, a hen with white ring round the neck and lame in the left leg from November 2nd until November 16th at Latchford, Warrington, Lancs.—(F. Fuller.) With white tail and spotted head, Torquay, November 11th.—(C. Wynne-Roberts.) Pure white blackbird seen last spring, returned in November to Oswestry.—(W. B. Robinson.) [Where was this bird all the summer?—Ed.] **ROOK**, white on one side of head and one wing, Torquay, November 8th.—(C. Wynne-Roberts.)

London Notes.

BLACKBIRD, with head and primary wing feathers white, on November 18th, at Cricklewood, N.W.—(L. F. Taylor.) **COCK BLACKBIRD**, with white head and patch of white on lower part of back, seen at Manor Park, E., on November 21st.—(Rev. J. W. Oliver.)

Butterflies and Moths.

BRIMSTONE BUTTERFLY on November 11th at Chandlers Ford, Hants.—(A. H. Cotton.) **PEACOCK**, November 22nd, Torquay.—(G. C. Stedham.) **RED ADMIRAL**, November 11th, Stoke Gabriel, Devon.—(W. J. W.) **CATERPILLARS OF THE FOX MOTH** feeding in the open as late as November 11th at Ruabon, Denbighshire, N.B.—(A. H. Thompson.)

Other Insects.

Bumble bees, wasps, and bluebottles, were on ivy blossom and elsewhere in many parts of the country during the latter part of November. Small leaf crickets, *T. cinereus*, and large green leaf cricket, *L. viridissima*, not heard this autumn in Devon.—(A. H. Swinton.)

Plants.

Blackberry and dewberry in bloom in all parts of the country during the latter part of November; wood violet near Cardiff, November 25th. Ripe raspberries, November 23rd, Uckfield, Sussex.—(M. M.) Six on one stalk, November 25th, Wisbech.—(A. J. Peckover.)

Bulb Planting.—The question is frequently asked how late may bulbs be planted, and many garden lovers refuse to plant bulbs now, though they would like to do so, because they fear it is too late. Messrs. Frederick Carter & Sons, Ltd., of Woking, who are recognised as experts on all questions connected with bulbs, assure us that it is not too late, and that excellent results may be obtained by planting any time during the next few weeks. They go further, and state that they have had most gratifying success with bulbs planted as late as March, and those who admire the garden anemones should know that they can be obtained in almost any month of the year according to the date at which they are planted. Roses, bulbs, seeds or any other garden stuff obtained from Messrs. Frederick Carter and Sons, Ltd., of Woking, will give perfect satisfaction.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 83. VOL. 4.

DECEMBER 15, 1906.

1d. WEEKLY.

Caddis Worms and Flies.

By RICHARD HANCOCK.

Illustrated from Photographs by the Author.

EVERY naturalist must have seen at some time or other when near the neighbourhood of water some moth-like flies somewhat unattractive in colour flying about from plant to plant.

If one is observed to settle one will find that the wings meet at an angle over the back in a roof-like manner, as will be seen from the upper fly in the photograph.

Their predominant colours are browns and greys, the lower wings often being

graph on the British Trichoptera in the Transactions of the Entomological Society, London, in 1865, records 150 species, while his revision of the European species contains no fewer than 500 belonging to this region.

The eggs surrounded by jelly are laid in masses in water, as many as a hundred being often deposited at a time, and the larval and pupal stages are passed in this element.

The larvæ on emergence from the egg after swimming about for a little time look about them for some material of which to make their home, and immediately commence operations:

They construct silken tubes attaching to the outside fragments of various substances, and a glance at the photograph of but a few of these cases or sheaths will readily show that there is as much variety in form as exists between the mud hut of the crofter and the palatial home of the aristocrat.

In the building of their home they make use of all kinds of material found in the bed or sides of the pool or stream; leaves, bits of stick, straw, seeds, roots, grains of gravel, sand, small stones, shells of bivalves, and other mollusca.

Nothing comes amiss to some species, while others are careful to use only one kind of material in its formation.

The Limnophilidæ, as will be seen on referring to the photograph, build very beautiful structures, one of the most curious being the sheath of *L. rhombicus*, which is often constructed of small fragments of straws, which, being placed transversely to the axis of the tube, forms in cross section a circle with- in a polygon, whose angles are produced beyond. When constructed of moss, as is often the case with

this species, the tube can be easily cut longitudinally and the smooth silken lining is readily observed.

L. pellucidus is content with joining portions of leaves together, forming a case flattish in form, but very wide in proportion.

Their sheaths are open at either end, some being cylindrical in form of uniform width, while others are tapered down and often curved slightly.

When the sheath becomes too small for the growing larvæ they make a fresh one, or more frequently enlarge their cases by adding tier upon tier to the wider end.

Some of the caddis worms build sheaths of a very irregular character, as *L. lunatus* and *A. nervosa*, placing here a bit of wood, there a bit of stone or perhaps a shell attaching long sticks, which often pass beyond the mouth of the sheath.

Most of the sheaths are heavy in comparison with the insect, and would be beyond the power of the creature to pull

(Continued on page 78.)



Caddis Fly.

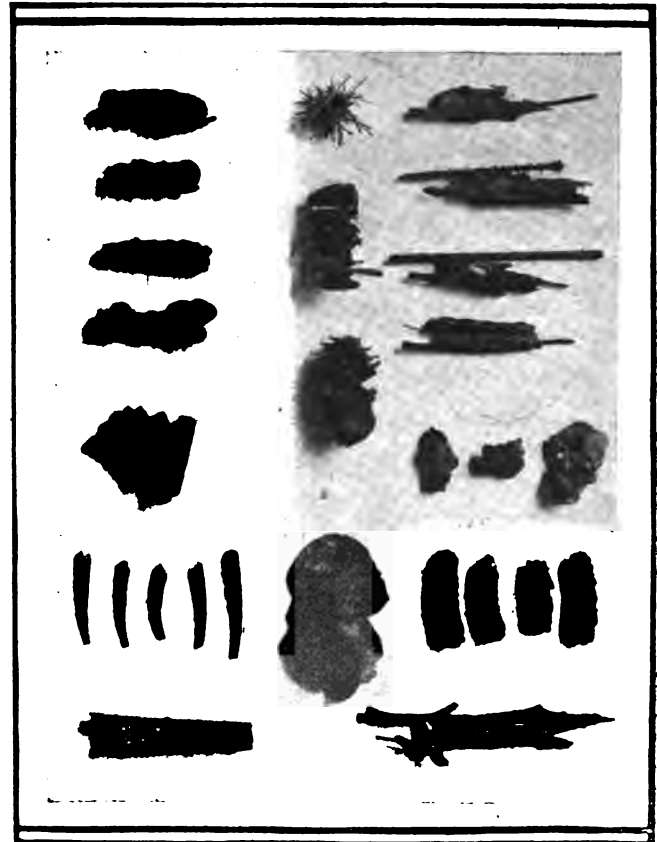
almost transparent, with very few hairs covering them, and this, together with their smallness in size, makes them apt to be passed by unnoticed.

A study of the life history of these Caddis flies is an entrancing one, and does not bristle with difficulties, as many other obscure orders of insects, from the fact that they can be readily kept under observation in small aquaria from the egg stage to the perfect insect.

They belong to the Phryganeidæ, a sub-family of Neuropterous or nerved winged insects, which include the dragon, may, stone, alder, snake, scorpion, and lacewing flies, many representatives of which are found throughout our country.

Some of our systematic entomologists, owing to peculiarities in the mouth organs, the labium and palpi being largely developed, while the mandibles are entirely absent, create a new family for them, viz., the Trichoptera, and the proper position in the classification of insects has often been the cause of much discussion. It, however, is not widely separated from the Lepidoptera or scale-winged insects (moths and butterflies), having some characters in common with them.

M'Lachlan, who published his mono-



Various Forms of Cases of Caddis Fly Larva.

The first four in column one and the middle two of column two are *Limnophilus flavicornis*. No. 5 in column one is *Sericostoma*, No. 6 *Setodes*, and No. 7 *Stenophylax nigricornis*. The top one of the middle column is *Limnophilus rhombicus*, and the bottom one *Limnophilus pellucidus*. The first four of the last column are *Limnophilus lunatus*, the next, three in a row, *Rhynophila*, the four in a row *Limnophilus extricatus*, and at the bottom is *Anabolia nervosa*.

Country-Side Notes.

Warham, Norfolk.

A solemn sadness reigns, a great peace is around us; in its light the cares of the waking day grow small and trivial; thoughts we cannot speak but only listen to, flood in upon us; and standing in the stillness, under earth's darkening dome, we feel that we are greater than our petty lives. Hung round with these dusky curtains, the world is no longer a mere dingy workshop, but a stately temple wherein man may worship, and where, at times, in the dimness, his groping hands touch God's.

J. K. JEROME.

HAVING been asked several times lately to write about the natural objects which may be collected for nature study in winter, I will devote my space to the subject this week. Many people, looking out over damp fields between brown hedges to a horizon fringed with bare trees, imagine that country rambles must be unproductive and disappointing in the short, cold days. Of course, this is not so; for, leaving out of thought the creatures of salt and fresh water, where the seasons bring little diminution of active life, the winter is scarcely less rich than the summer anywhere in its objects of interest.

Along the laneside hedgerows and ditch-banks, on sand dunes, in woods, gravel pits, etc., variously marked and shaped snailshells of many kinds are easily found; and, although many of them have lost a good deal of their original colouring, they have the merit as "specimens" of being empty. A very little shell-collecting on systematic lines in winter will enable anyone to get a very fair general knowledge of British landshells.

Most kinds of nuts and other seeds or fruits with hard shells—such as walnuts, hazel nuts, acorns, beech nuts, rose hips, haws, fruit of the ivy, ash, and so on—may still be found all through the winter, as well as the cones of fir and pine, larch, juniper, etc., and the fruited catkins of alder and birch. In these there is a good deal of interesting matter for study, the more especially as they often bear traces of the work of the different wild creatures which feed upon them.

Thus the few remaining walnuts are most likely to be found beneath large trees of other kinds growing at a short distance from the walnut tree: in which case they will bear the mark of the beaks of the rooks. These wary birds usually carry their stolen walnuts to high branches of neighbouring trees, and when they commence to force the shells open the nuts often slip and fall to the grass below, whither the rooks do not think it safe to follow. This is how walnut trees are frequently sown amid clumps of other trees; and you can generally recognise the walnut which a rook has dropped by the little conical hole which the bird has commenced to make at the one soft point in the juncture of the two halves of the shell. Even more interesting, perhaps, is the work of the nuthatch upon the common hazel-nut; and a small piece of the bark of a tree,

into which the bird has wedged the nut before hammering it open to get out the kernel would always be a valued specimen in a nature study museum. For comparison with this, the shells of other hazel nuts split in half by squirrels, bored in various ways by different kinds of mice, roughly hammered open by tits, neatly drilled by weevils, and so on, make a very interesting collection, and are very easily found where nut bushes grow and wild life abounds.

The acorn and beech nut, again, show, each in its way, the marks of teeth and beaks of different enemies, while alder catkins picked by siskins, birch catkins pulled to pieces by redpolls, fir cones stripped by squirrels, haws skinned by field-mice, ivy seeds dropped by thrushes, etc., etc., all have their special interests, as have also the rose hips, upon which the greenfinches feed by day and the field mice by night. Very few are left by January, but it is easy to find the remains of past meals either under the rose bushes, where the greenfinches dropped them, or in some convenient place, such as an old bird's nest close by, whither the mice had carried them. The contrast is very interesting, although the object of the bird and the mouse was the same, namely, to eat the seeds of the rose.

You know the plan of the rose's fruit? Each seed is enclosed in a stoney shell; and a number of these are surrounded with bristly hairs inside a bright reddish-orange receptacle. Any creature which is tempted—as the waxwing is—to swallow these reddish-orange hips whole, carries out the plan of the fruit, because the seeds are protected by their hard shells and are presently dropped elsewhere, causing rose bushes to spring up in new places. Against creatures which might spoil the fruit by tearing it open and eating only the outer pulp, the bristly hairs are a protection; and the indigestible character of the hard shell round the seeds renders it useless for any creature to pick these out and swallow them. But against the wood-mouse (often called the long-tailed field-mouse) and the greenfinch the wild rose's defences avail nothing; for the former drills a tiny hole in the shell of each seed and picks out the kernel, while the other happens to have a bill at once pointed enough to pick out the seeds and strong enough to split their stoney shells. Thus a very interesting story seems to be attached to the tiny split or drilled shells of triangular whitish "seeds" that you find near the wild rose bushes.

Other objects of interest connected with the wild rose bushes are the fuzzy brown lumps in which some of the shoots terminate. These are even more conspicuous now when the rose bushes are leafless than they were in summer, although then they were really beautiful things of mossy red and green. Now, too, it is easier to examine their structure and note how all the vigour of the shoot was somehow diverted by the string of a tiny gallwasp to building up this mossy growth as a compound

residence for the wasp's numerous grub-children. Now we can make sections of the edifice and mark the little cubicles which served at once as separate nurseries and larders for the grubs.

Sometimes we discover that these mossy rose-growths—"bedeguars," they are called—have been burglarised by mice or tits. From cubicle to cubicle the murderous invader had gnawed or hammered his way, devouring each occupant as the work proceeded. Similar ravages may be discovered in other galls. The "marble galls," for instance, now clustering, dry and round, upon the twigs of hedgerow oaks, may often be found upon the ground, roughly nibbled open by mice to reach the fat gall-wasp chrysalis which lay hidden in the centre. Besides these galls there are withered, spongy relics of the oak-apples of May, as well as galls upon other plants, such as the long gnarled galls upon bramble-stems.

Carefully splitting open other dry stems of bramble, or, indeed, any vegetable growth which is hollow by age or habit, you may find evidence of many curious tenants, from nurseries of solitary bees in many compartments to chrysalids of moths. Indeed, wherever you disturb the natural order of things in winter you may find the chrysalids of moths. When you pluck the moss from a tree-trunk or separate dried leaves that are spun together, when you pull up the grass between the spreading roots of a tree or turn up the soil there with a trowel, the reward of your labour will almost always be the buried chrysalids of moths. Sometimes you will find a dozen under one tree; sometimes a dozen trees will scarcely produce as many. But, whether few or many, the chrysalids of moths thus obtained by what collectors call "pupa digging" are welcome gifts for friends in cities, who have no opportunities to find such things. The moths may not be rare, but their emergence from the chrysalids in spring almost exceeds in interest the development of the tulip or hyacinth from its bulb.

Those insects which pass the winter as caterpillars or as perfect insects are less easily discovered, so clever is their concealment—as, indeed, it needs to be, for disturbance means death to them in winter. But there are some kinds of moths' eggs which are always worth looking for. The female vapourer moth, for instance, has laid all her eggs upon the outside of the cocoon in which she was born, making it a fairly conspicuous object in some crevice of a tree-trunk or niche in park or garden railings. Now and then, too, you may come across the "fairy rings" of eggs which the lackey-moth fastens like a bracelet round some twig of wild or orchard fruit-tree. You can hardly measure the amount of interest which grows from these tiny things when the eggs hatch in spring and the pretty, many-coloured caterpillars grow by stages to full size and then spin cocoons, from which in due time the moths emerge.

Though the birds' nesting season ended many months ago, you discover in mid-winter many more nests than can be found in spring. A robin's used nursery in an old tin can, a mud-lined thrush's nest which has been re-lined with feathers for a sparrow's winter quarters, a hedge-sparrow's nest which has been used as a dining-table by a mouse until it is filled to the brim with the nibbled remnants of many meals—these are familiar types of discoveries that you make in winter when the hedges are bare, and many things not seen in summer leap to the eye.

* * *

In connection with birds, however, the best "specimens" which you can collect at any season are feathers; and in winter your opportunities are best because then hawks are most ubiquitous (leaving patches of feathers wherever they make meals) and other casualties in bird-life most numerous. In collecting feathers the object should be to obtain samples of all the more important parts of the bird's plumage; and these, when fastened upon a sheet of white paper, give a very picturesque and suggestive idea of the bird's entire colouring. You may learn much, too, by comparing the feathers in detail with the descriptions given of them in the books. After this the best use you can make of them is to pass them on to friends who have not opportunities, as you have, of finding them where a hawk has dined or a telegraph wire has taken its toll of a flock of passing migrants. Any one, of course, who knows enough of the rudiments of taxidermy to skin a bird—a simple operation which can be managed successfully at the first attempt—may make complete "specimens" of lasting value from the corpses which are so commonly picked up in winter.

* * *

But, in spite of the leafless trees and the brown, bare hedges, it is to the plant world that we still come back in mid-winter for subjects of interest worth collecting on country rambles. No other season suits so well for studying the forms of evergreen leaves and noting how the fir differs from the spruce and the pine from both. Lichens and mosses are at their best; and so are many fungi, especially those of woody structure which are well adapted for transmission to friends at a distance, when you have satisfactorily identified and examined them. Many ferns are still green, such as the polypody and hart's tongue; and the bramble still has blackened leaves, while not a few flowers are always ready to come into midwinter bloom—deadnettle, heartsease, field speedwell, furze, daisy, chickweed, etc., etc.—and the honeysuckle's sprouting leaves and the hazel's lengthening catkins bring happy promise of coming spring into the minds of all who find them when January is young.

* * *

Skeleton leaves, discovered in plenty in damp woodland corners where the fallen leaves of many trees lie in layers; fossils of all kinds and stones of interest; miscellaneous curiosities, such as unexpectedly fall into our hands in every country ramble—owls' pellets, quaint vegetable growths, skeletons of either mammals, or crippled birds, etc.—of these alone a few pairs of sharp eyes under good guidance would easily find enough

to make good material for interesting study. But most valuable, perhaps, of all the trophies of a country ramble in winter would be a healthy root of some familiar but handsome wild plant selected to mark the week with pleasant memory. Foxglove or harebell, some fern or primrose or wood violet—to watch it grow from day to day and flower at last in full wild beauty is a large pleasure easily obtained as the result of a winter walk.

* * *

"In sixteen hours from leaving the Wandsworth Gas Works, Mr. Leslie Bucknall and his companion were viewing all the glories of sunrise on the Alps." I quote this from the newspaper accounts of a recent successful balloon trip, in order to show how simple the autumn migration of birds really is. All that we have to comprehend is that when the breeding season is over the birds come under the influence of their inherited tendency to fly in autumn when the wind is in a cold quarter. A balloon starting from the Thames Valley with a cold wind that travelled at thirty miles an hour reached the Alps in sixteen hours; a bird, whose speed in flight would be added to the velocity of the wind, would do the distance in half the time. It might leave the Thames Valley on a chilly October morning and be catching flies in a sunny sheltered valley in Italy or Spain in the afternoon. Perhaps a fortnight later it would feel the warning chill in the wind again; and, after leaving its Italian or Spanish resting-place in the morning, be skimming over the sunny Nile or through the palm-groves of Morocco in the afternoon.

* * *

The danger of this migration, which has been freely exemplified this year, is also the same as that of ballooning; for neither bird nor balloon has any guarantee that the wind will continue to blow in the right direction. To some extent, I think, the instinct of the birds obtains security under this head, because it is usually noticeable that they do not depart until the chilly wind has been blowing for a considerable time. Although, of course, they understand neither where they are going, nor why they thus delay to start, they do by this means get some guarantee that the right wind is blowing for a long distance ahead of them. Nevertheless, there evidently are occasions when the wind becomes seriously deflected, and the birds are so far carried out of their course that they arrive from the Continent upon the southern and western coasts of Britain at times when they should be well on their way to Africa. This accounts for the reappearance of swallows in November, when the birds that we see are probably not British swallows at all, but wanderers from Eastern Europe.

* * *

In recording these reappearances of swallows and house-martins late in November, several correspondents have noted that the belated birds, especially if they were solitary, were liable to be attacked by sparrows. I have noticed this myself, and have always considered it one of the least lovable of the sparrow's traits that it should be so ready to assault the swallow-birds when they are most weak and helpless. Yet it is not fair, after all, to blame the sparrow because—like every other creature except, on some occasions,

man—it only obeys the natural instincts which it has inherited for the good of the race. For the sparrows do not assemble to mob the late swallow or house-martin, as they would a hawk or an owl, a weasel or a rat. Then their gregarious instinct teaches them to unite together against the common enemy; and on the principle that the unknown is always terrible they naturally employ the same system of combined action against any birds, mammals, or reptiles, or escaped cagebirds, whose appearance they distrust.

* * *

But in the case of the swallows or house-martins, you will notice that only one sparrow seems to be aggressive, and that, although it vindictively pursues its victim and sometimes may beat it to the ground, the attacks are only delivered when the swallow or martin circles near to the roof on which the sparrow is perched. The true meaning of this I take to be that the sparrow is in occupation of a martin's or swallow's nest, intending to use it as a sleeping-place during the winter, and that its instinct naturally impels it to assault any bird which has the appearance of the owner of the nest. From the human point of view such conduct might seem criminal; but we must only judge the conduct of other creatures by the standard of advantage which it secures for the race. Tried under this law, the sparrow must be acquitted without a stain upon its character every time. All the same, I have not grieved when I have seen the sparrow's bullying behaviour terminated with a charge of shot by an indignant householder who sympathised with the swallow.

E. Kay Robinson.

December.

On mountain peaks, in valleys low,
December scatters, as she flies,
Soft snow-flakes, and the deep drifts grow,
And veil the hills in white disguise.
Thus while the Earth in slumber lies,
December veils her all in white—
As pure as robes of Paradise,
But holly-berries glimmer bright!

Long icicles stand all a-row
To crown her, and the north wind sighs
To win her love, and strives to show
His kingly might, and fiercely vies
With Ocean's roar to win the prize!
And raves and rages day and night,
Yet Christmas roses fair arise,
And holly-berries glimmer bright!

ENVOI.

Red robin sings—his bright eye spies
Proud Queen December in her flight!
Her bard is he when storm-winds rise,
And holly-berries glimmer bright!

MAUD E. SARGENT.

FROM A READER.

Holbeach,
S. Lincolnshire.

SIR,
I must thank you very much for stereoscope. It is a marvellous instrument; its effects are astounding and magnificent. Just the thing for readers to present to their friends at Christmas.

With many thanks,

I am,

Yours sincerely,
J. J. TOWNS.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Memory in Fish.—I have possessed a dace since January, 1903, 5 minnows and 5 very small dace since April, 1906, in a large aquarium. Three weeks ago, wanting to do some repairs I put the fish into a large globe and covered them up dark. Last Monday they were replaced in their old home and on Tuesday, when I tapped the front glass to feed them (their old signal) all came up to the front and there awaited the small worms put to them.—W. HALL, Basingbroke.

Relics of the Past.—There are railway works from Bere Alston via Calstock in which there is a big viaduct in course of construction over the River Tamar between Devon and Cornwall. In several of the pits which have been sunk to find a foundation for the piers both in the river and in the marsh inside the embankment at a depth of 16 and 50 feet there have been some large trees found, in some cases lying across the pit and having to be cut through with considerable trouble. They were good bog oak. There were also several large granite stones, some of which were three or four feet through, but worn smooth and rounded like pebbles; one was found three or four hundred feet from the present river and sixteen feet from the surface. This shows that the river must have been much larger and deeper than it is at present, and perhaps rapid to grind down such hard and large stones.—H. J. GERMAN, Bere Alston.

The Robin's Bath.—I had never seen a robin bathe until last Sunday evening. It was getting dim, and I saw a robin in a puddle of dirty water by the roadside. The water was up to its wings. It dipped under a few times, and when it stood up the water ran off as it does off a duck's back. It did not wet the feathers through, as in the case of the sparrow, etc.—H. J. GERMAN, Bere Alston.

Colour Sense in Bees.—A few months ago I was sitting out of doors making a study in water-colour of a teasel and had just finished painting one of the teasel heads which had a band of delicate mauve flowers round its centre, when a bumble bee, after flying several times round my head, lit on the flower-head represented in my sketch and apparently attempted to get the nectar therefrom. If the bee had no sense of colour, why did it alight on the mauve band of colour on the sketch? It took no notice of the other heads of the teasel I had painted, which had not begun their florescence and were therefore green. After satisfying himself that he could extract nothing from my drawing he made for the real plant and lit on the mauve band of flowers where he apparently got what he desired.—W. F. PRICE, Meliden Prestatyn, North Wales.

Cats with Superfluous Toes.—Near here there is a cat which has every paw doubled, that is, each foot is double. Her kitten, the one saved from the first litter, is also doubly equipped in the same way, possessing eight feet on four legs.—H. C. HAWKINS, "Pembury," S. Godstone.

I also am the proud possessor of a six-toed kitten, but I consider that it has six feet, as the three little toes have a pad, and form a complete foot. The difference between his right and left feet is exactly the same as in the one drawn by Miss Wood, but his hind feet are much larger than they should be for

his age, and all four legs are possessed of great strength. His mother is an ordinary half-Persian cat. I have been told that this six-footed freak is called a "Japanese" cat, is this so?—LAURA H. HENDERSON.

The Cannon Ball Tree.—The cannon ball tree (*Couroupita guianensis*) is one of the most remarkable of the forest trees of British Guiana. The large heavy seed-pods from which the tree gets its popular name, depend from tough twigs which sprout directly from

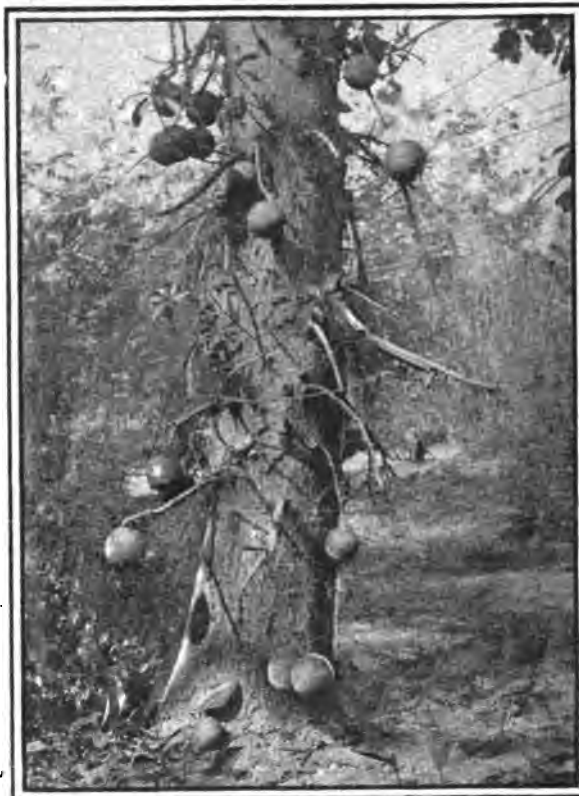


Photo.] The Cannon Ball Tree. [M. S. Bindley.

This is one of the most remarkable forest trees of British Guiana.

the hard bark of the trunk. The wax-like flowers, one of which is shown in our picture, are red and white delicately blended.—M. S. BINDLEY.

Noises of Butterflies and Moths.—A few years ago my father, brother, and a friend went "sugaring" and returned with an account of a strange squeaking moth which they had taken. The insect was a pink-barred sallow (*Xanthia silago*). The squeaking noise was emitted as the moth dropped from the tree amongst the herbage when the light was flashed on. I have often examined the moth, but cannot, with the naked eye, see how the sound would be produced. Have other readers ever had a similar experience with this moth?—A. H. THOMPSON, Aberderfyn, Ruabon.

I have frequently taken moths that have settled on the ground outside the radius of the electric light by hearing the "tack" like sound of their descent. It is with the larger noctua and bombycida that the sound is most often heard. I have taken a poplar hawk at the electric light this year that descended some ten yards away from the lamp, the sound of its descent guiding me to where it had settled. I should think the noise is caused by the wings striking the substance on which the insect alights, but this is merely an opinion. It is, however, a rest for the eyes from the electric

light when you can collect moths by sound.—THOMAS J. SHELLEY, King's Road, Cardiff.

Rabbit Crouching.—Some time ago I caught a wild rabbit in a net unharmed and took it home, intending to keep it for a while in a hutch with some tame ones; but just as I was going to put it in it slipped away and ran down the garden, as I thought, straight for a burrow. I ran after it and to my surprise it crouched within fifteen feet of the hole. Being a strange rabbit to that part of the farm it did not know where to find a hole, I picked it up again and put in the hutch.—H. J. GERMAN, Bere Alston.

Hare Swimming.—A friend and I were walking in a field near a pond when suddenly a hare rose up in front of us. We gave chase, and it made for the pond, dashed in, and swam to the other side, a distance of about twelve yards, and came out like a wet rag and ran off. I should like to know if hares often do this. I like your paper very much.—J. M. T. DENNY, Cardross Park, Cardross, Dumbartonshire. [Yes, hares often take to water without any hesitation.—ED.]

Birds' Pellets.—Do other birds besides birds of prey possess the power of ejecting undigested food at will? A few weeks ago, while walking in the country, I observed a blackbird on a wall a few yards off opening its beak repeatedly without emitting a sound. I had been reading in THE COUNTRY-SIDE some notes about birds yawning, so paused to see if this was a case, when the bird ejected a small pellet from its beak and flew away, not looking at all distressed. I found the pellet on the wall; it was in the shape of a grain of corn, but three or four times as large, very moist, and consisting apparently of vegetable fibre, with at least one grain of corn included. No doubt was possible that it had been in the birds' crop.—MARY W. M. FALCONER, L.L.A., Elder Bank, Duns, N.B.

Birds and Rat.—On November 23rd while driving on the Croydon Road, between Wallington and Beddington, I heard a commotion in the hedge, and in about a minute a large rat ran across the road closely followed by a blackbird and a thrush, both of them pecking at its head. I could not see the end of the adventure as they all scrambled through the next hedge into a field of turnips.—E. C. TANNER, Sutton.

Sparrow-Hawk's Nests.—I think Mr. John Walpole Bond goes a little too far when he says of the sparrow-hawk "It always constructs its own nest, and even when another bird's ancient home or a squirrel's drey is used as a foundation, the usual nest is built on top of it."

I have in my collection two clutches of sparrow-hawk's eggs which came from a magpie's nest. It was quite a new nest, the original owner having been shot and I took the eggs, six in number. The hawk laid her eggs about fourteen days after without having altered the nest in any way. I took the eggs when she had laid four and about three weeks later I visited the nest and found five more which I also took. The following year I again visited the nest rather late in the season and found it again occupied by sparrow-hawks, there being six eggs hard set which I left. The nest on this occasion had been renovated inside only. The nest was situated in a hawthorn tree about ten feet from the ground. I may say that the nest has since been used on two occasions by long-eared owls.—T. E. RANDALL.

A Rare Cactus.—The Cactus shown in the photograph is that of *Astrophytum Myriostigma*, which is I believe rarely seen in this country.



Photo.] [W. C. Nicholson.

Astrophytum myriostigma.

A curious cactus rarely seen in this country.

As you will see, it is a very curious plant, growing as it does entirely without spines; it also has the appearance of a piece of beautifully carved stone, something the shape of a mitre. The flower is a very delicate yellow, with a rich orange centre.—W. CLIFTON NICHOLSON, Earlsfield.

Was Darwin Wrong?—I do not know whether you have seen the article by Professor Henslow in the November number of the *Nineteenth Century*, on "The True Darwinism." If you have not, I should like to commend it to your notice, and that of your readers. If the theory and the facts on which it is based be correct, then "the origin of species by means of natural selection" will have to be relegated to the limbo of baseless and exploded hypotheses.

Allow me to give you one or two short extracts from Professor Henslow's article, only premising that its main object is to show that special varieties are due, not to natural selection, but to the direct action of varying environment.

"The study of 'Ecology,' or of 'Plants at Home,' i.e., their structure and relationships to their conditions of life, has revealed to botanists . . . that the respective structures of such plants, are in close adaptation to their environments, and are the 'definite results of the direct action of those conditions of life.' These results are due to a *responsive power residing in protoplasm and the nucleus*, which at once set to work to construct tissues in adjustment to the influences of any changed environments. This is no theory, for it can be witnessed in actual procedure both in nature, and easily by experiment." (Page 799.)

"Adaptation," as used by Ecologists, means simply that the direct action of the altered conditions of life upon the protoplasm and nucleus of organisms calls forth their responsiveness, and adaptations follow at once. Hence the first appearance and rapid formation of adaptations are the immediate results of a Universal Natural Law." (Page 801.)

"Five-and-forty years' study of plants, as growing in nature, has long ago convinced me that 'Darwinism' could not account for evolution; and it is at least gratifying to find that 'Ecological' botanists, who study plants 'at home,' have now come to the same conclusion." (Page 801.)

Prof. Henslow concludes by expressing his firm opinion that the theory (for it is no

more) of the origin of species by means of natural selection will disappear before "adaptation to the conditions of life by means of the direct response of the organism."

I have been thinking much about this subject of late, and shall feel obliged by your insertion of the following brief extracts from my note-book, made last month before I saw Prof. Henslow's article.

"Life and environment must be considered together. Neither must evolution be limited in its operation to the domain of vegetable and animal life. We must understand it in its widest sense, as embracing all terrestrial and cosmic changes by which worlds and planetary systems have been evolved out of nebulous matter. These changes form environments; and these environments, I take it, have been important factors in the ever ascending scale of life, even up to man himself. As to 'natural selection,' I do not like the term, and would prefer 'the power of adaptation to varying environments.'"—(Rev.) J. GURNHILL, East Stockwith Vicarage.

Mercy in Sport.—"Quick Dispatchers," such as spikes, nippers, knives, etc., as applied to small game, are an abomination to a true and merciful sportsman. What is essential is that the wounded creature shall be promptly put out of its suffering. To effect this, without loss of time, is simply to rap the bird's head (say partridge size) against the gun barrels. The first blow renders it senseless, and though it may continue to flutter spasmodically, it is past all feeling. Two more raps, if properly administered, settle the business. Before putting the game into the bag, however, the operator pauses until he observes that the head of the quarry swings loosely from the neck and body, a certain sign that life is absolutely extinct. In the case of a pheasant or larger bird, the gun should be placed on the ground whilst the quarry is taken in both hands and treated as before. The use of the gun barrels is preferable to anything else, because, always at hand, and as an objective, there is no likelihood of missing the stroke.

This method, however, cannot be recommended when the bird is required as a specimen for preservation. In that instance, squeeze it tightly across the chest, as quoted in your issue of November 24th, but again be careful not to relax the pressure until the head swings loose.

It may be objected that knocking a bird's head against gun barrels is to bespatter them with blood; but to those fastidious ones, I say give up shooting—a sportsman should be above such squeamishness. A few specks of blood, more or less, is of secondary importance compared with an act of mercy.—C. B. N. WISHANGER, Farnham.

I wish something could be done to raise the sportsman-like feeling in hunting. I do not consider digging a fox out of a hole when it has taken to earth, after a long run, a very sportsman-like proceeding, and yet I believe it is commonly the case.

I frequently see paragraphs in the paper of which this is an example: "The — fox-ounds, after a long run, ran a fox into the grounds of —. It took refuge in one of the lower rooms but was brought out and thrown to the hounds." I think at least it might be given a run for its life. Of course it may be urged that the hounds must be rewarded for their work; but even if they did not catch it, I think life is of more importance to a fox than a few mouthfuls of unsavoury meat is to a pack of well-fed fox-hounds. Hunting in itself is a fine old sport, but it is supposed to consist in hunting the animal and not in seeing it killed. If that is the case it descends to the level of bear and bull-baiting, which were stamped out long ago as unworthy of a gentleman and a sportsman.—P. H. HANBURY, Trelawney, Combe Down, near Bath.

Bird Notes from S. Africa.—As a member of the B.E.N.A. in a part of the Empire south of the equator I thought your readers might be interested in certain conclusions I have formed as a result of notes about birds and butterflies taken during twelve months travelling about in the eastern part of the Transvaal.

A study of the birds provides one with ample illustrations of the effect of environment on bird-life generally. The vast stretches of bare, treeless veldt are not conducive to much bird life, but in the Eastern Transvaal towards Delagoa Bay there is a tract of fine mountainous country covered with bushes and stunted trees; this tract gradually descends from a height of 6,000 feet above sea-level to that of 600. Bird-life there is plentiful enough, and very gaudy, bright-plumaged birds they are, and they can sing, too; but as a rule their songs are rather jerky and not as polished as the nightingale, as sweet as the thrush, or as rich as the blackbird.

The birds of prey are very similar to those of Europe; the South African kestrel differs very slightly from the British; harriers may frequently be seen swooping over the Veldt—Montague's harrier especially is the greatest enemy to the Boer's chickens. One owl so closely resembles the British barn owl in size, habits and plumage that it is called the South African barn owl; but, like the human race, the general tone of colouring is somewhat darker in the case of the Transvaaler.—(Rev.) C. F. TOMLINSON, S.A. Church Railway Mission, Braamfontein, Johannesburg.

Albino Starling.—Herewith a photo of a white starling, accidentally shot by my man, keeping birds off the cherry trees in the summer. He fired into a tree, killing several ordinary starlings and to his surprise found a white bird amongst them. I might mention it had pink eyes which I thought was rather peculiar. Probably it may interest other readers of your paper, as much as some of the prints interest me. It was shot at a



Photo.] [G. F. Spanton.

A White Starling.

One of two, which was accidentally shot near Ramsgate.

farm near Ramsgate, where there was another live one still flying about.—G. F. SPANTON, Ramsgate. [The pink eyes showed that the bird was a complete albino. Perhaps some readers can say where the other bird, which was not shot, is now.—ED.]

THE COUNTRY-SIDE.

A Journal of the Country, Garden, Poultry, Nature, Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, DECEMBER 15, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Caterpillars' Tricks.

By Nora Alexander.

THE average man probably thinks, when he has time to think at all, that life contains difficulties enough and to spare, but his sink into mere trifles when compared with those of the average insect. Take caterpillars, for instance. The worst of being a caterpillar is that you can never learn by experience, simply because Nature doesn't give you the chance. For instance, you make a mistake—stir the sixteenth part of an inch when you ought to keep still, and lo! an enemy swoops down on you and gobbles you up before you've even time to realise that it was a mistake, and there you are! or to be more accurate, there you aren't.

To the unfortunate caterpillar there are no minor risks—it's always a question of Life and Death. Consider the case of the stick caterpillar. He is so tasty a morsel himself that he is compelled to hide all day, and only creep out at night for his own much-deferred dinner. On Monday night his foraging may not be very successful. On Tuesday, driven by the pangs of hunger, he sallies out sooner than usual. Result—on Wednesday he isn't there to want a dinner at all! It's a heavy penalty to pay for the alteration of your dinner hour.

But this is all by the way. What I wanted to point out was, that if you live in such an atmosphere of peril you must needs have adequate means of defence. And Nature is very fair in a broad kind of way.

For example, if a creature is very palatable to his enemies, he is generally coloured in such a way as to be very difficult to see, besides having some reserve method of defence up his sleeve. If, on the other hand, he happens to be of an unpalatable nature, he is often very gorgeously coloured, and so far from concealing himself, is aggressively conspicuous.

Now we are not intimately acquainted with the mental capacities of birds and lizards and other insect-eating creatures, but it is quite easy to experimentally prove, within the limits of a back-garden, that they can and do learn by experience, and that they are quite capable of following some such simple reasoning as this—"Bright colour—nasty taste—Deduction—don't eat."

Now there are four caterpillars whose modes of defence I am going to talk about, be-

found in any hedge or suburban garden. The first is the small and brilliantly-coloured "Palmer worm," to be found in dozens on any hawthorn hedge. He is black, red and white, and—hairy. Herein, as with Samson, lies his strength.

For if you take him up, and after handling him, touch your face, an irritating rash results, caused by the shedding of his fine barbed hairs. Now it is obvious that the effect of these poisonous hairs on the delicate lining membrane of an enemy's mouth would be infinitely worse than on your face.

But—even for a caterpillar there is always a big "but" in Life—it is also obvious that he may be subjected to what an entomologist has termed "experimental tasting," a process unpleasant for one party, and fatal to the other. Now his brilliant colouring serves as we have seen, as a preliminary warning, but birds and lizards share with humanity a tendency to disregard warnings when stronger instincts are at work, hunger for instance. Should this occur, and his enemy come unpleasantly near, our caterpillar promptly ejects from certain glands, placed along his back, a fluid of most objectionable odour.

If this, too, fails, there is his last resource of the irritating hairs, but this, it is to be observed, benefits, not himself, but the rest of his kind. Nature, you know, is never individualistic.

Then there is the Tussock Caterpillar. Hairs are his chief defence also, but his method is quite different.

A tussock consists of a bundle of hairs so fine, and so closely packed as to resemble small fleshy humps. They are generally of a creamy white colour, and are placed at regular intervals along the back on a velvety-black background. On the approach of an enemy the caterpillar promptly curves his body in such a way as to make them appear to project more than they really do, and to offer to the attacking party a tempting point of seizure—with the result that the enemy is left struggling hopelessly with a mouthful of hairs, while his would-be victim crawls complacently away.

Have you ever seen a lizard look disgusted? If not, offer him a tussock caterpillar, and watch the result. If he is old and wise, he will ignore it; if he is young and foolish with his experience yet to gain, you will have an opportunity of studying the "expression of the emotions in animals."

Sticky caterpillars, so called because of their resemblance to the twigs of the hawthorn on which they live, are among the commonest of British caterpillars, there being nearly 300 species, yet very few people except naturalists have ever seen them, for the simple reason that they are extremely difficult to see.

Most caterpillars have five pairs of claspers besides their proper legs, but the stick caterpillar has only two, and both of these are placed at the hinder end of the body, and used to clasp the twig. The body itself is long and thin, and in many cases has little humps here and there, thus mimicking the appearance of buds.

It always places itself like a twig, i.e., standing out at an angle from the main branch, and in this position it remains hour after hour, only changing its attitude to feed, which it generally does at night.

It will be at once apparent that the strain of maintaining such a position would be quite impossible without support, and this the caterpillar provides for itself in the shape of a fine thread of silk, passing from its head to the stem. As to colouring, if the twig of the food plant has a mottled greenish brownish brown tint, this is accurately reproduced by the caterpillar, and so on.

Of course I do not mean that the caterpillar consciously adapts itself to its surroundings, but only that these adaptations have been produced by the action of natural selection—that is to say, the caterpillars happening in the beginning to possess some resemblance to their surroundings, have run less chance of being devoured, and have handed this protective re-

semblance down to their descendants, until in the course of ages, it has slowly attained to something like perfection.

Man breeds animals on precisely the same principle, knowing that he can trust to heredity to hand down and emphasise, so to speak, the points he wants emphasised.

Talking of caterpillars resembling their surroundings tempts me to mention a certain American caterpillar, who, with true American originality, reverses the order of things, and makes its surroundings resemble itself.

It is green above and dark below, and its habit is to lie along a leaf so that its dark colour melts into the shadow of the mid-rib. But first it eats away the leaf in such a way as to leave a number of pieces, some often resembling itself, attached to the mid-rib. This done, it follows the habit of Brer Fox, and "lies low."

Lastly—the caterpillar of the Puss Moth, which is very common on poplar and willow, has perhaps the most entertaining mode of defence. It is large and green, with a purplish black back. This sounds conspicuous, but as a matter of fact it is peculiarly difficult to find, so perfectly does it harmonise with its surroundings. To remove it or many others from their surroundings is to receive a lesson on the inadequacy of one's artistic faculties for the varying tints of Nature are far more complicated, and the effects of light and shade far more subtle than we are at all able to realize.

To take a glaring instance, a zebra strikes one always as a fairly conspicuous animal, but Francis Galton, in his "South Africa," writes: "On a bright starlight night the breathing of one may be heard close by you, and yet you will be perfectly unable to see the animal," so admirably does he harmonise with his surroundings." But I am wandering off from the Puss Moth caterpillar.

When you have found him, touch him, and he will instantly turn upon you with an irresistibly funny caricature of a human face. This is done by drawing back his head into the first segment of the body, and inflating the edge, which is a brilliant red. The imitation eyes are jet black, and the whole effect, though ludicrous to a human, is terrifying to a small bird or a lizard. It is added to by the protrusion of two pink whips from the hinder end of the body, which are brought forward and waved vigorously over the head.

But he has to be seen to be appreciated, and once seen—well, I regret to reflect how in my own far-off youth I never could enter the laboratory of a certain famous entomologist without poking a finger into the jam jar, where two of them flourished.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

Amateur Photography.

AMONG THE CLIFFS.—II.

By W. Robinson Smith.

LET me now give a short outline of the procedure, where it is necessary that one should be let down by a rope over the face of a precipice or cliff. Premising, however, that no one should make any important



Photo.] [A. C. Cairns.

Gannets on the Bass Rock.

A good field for the cliff photographer.

or dangerous descent when there is not at least one skilled climber in the party.

THE ROPE.—This should be a stout manilla. The thickness of the rope can, to some extent, depend on the length of the descent required. We use a three inch or perhaps a little more. By three inch I mean a rope three inches in circumference or a little over one inch thick. It is attached to slings, which in turn are attached to the climber, so as not to interfere with his movements.

The feet may or may not be bare but if shoes are worn the thinnest of indiarubber sand-shoes will give the best grip on a dry cliff and no descent ought to be made when the cliff is wet.

Thick clothing also is necessary, as it is often very cold, and a good tweed shooting jacket with riding breeches make the best equipment.

On the head, if it is possible, an old helmet of some kind is the best headgear. And in this respect old climbers will tell you that they are never conscious of the least fear that the rope may break but that they are in constant apprehension that a rock will fall on them when they are hanging helpless in mid-air.

The men who are to lower the rope require holes to be dug for their feet. These holes are small round holes of about two feet deep and perhaps a foot wide. This, of course, to give them the greatest purchase on the ground.

When the preliminaries are arranged, the climber faces the men who are holding the rope and walks backwards to the very edge of the rock. There he stops and drives a spike-block into the ground, or fixes it in a crevice through which the rope will run and prevent any friction of the strands on the cliff edge.

Then, bending down to avoid anything in the nature of a jerk, he gently lowers himself over the abyss to the desired distance, usually keeping a gentle swinging motion, that he may never lose touch with the rock even though it should overhang.

There must be a signalman stationed at some point, where the climber can be easily

seen from, which is also in view of the men at the rope. A code of simple signals also is prearranged, such as "lower," "raise."

THE CAMERA.—There is nothing special about the use of the camera on the cliffs. The stand should be an extra thick and steady one, as there is nearly always some breeze and often half a gale.

Seabirds are, as a rule, very easy to photograph on their nests—which is well illustrated by our photograph of that most local of all seabirds, the gannet (*Seula bassana*). The photograph was taken on that historic pile of rocks from which the bird takes its scientific name—the Bass Rock.

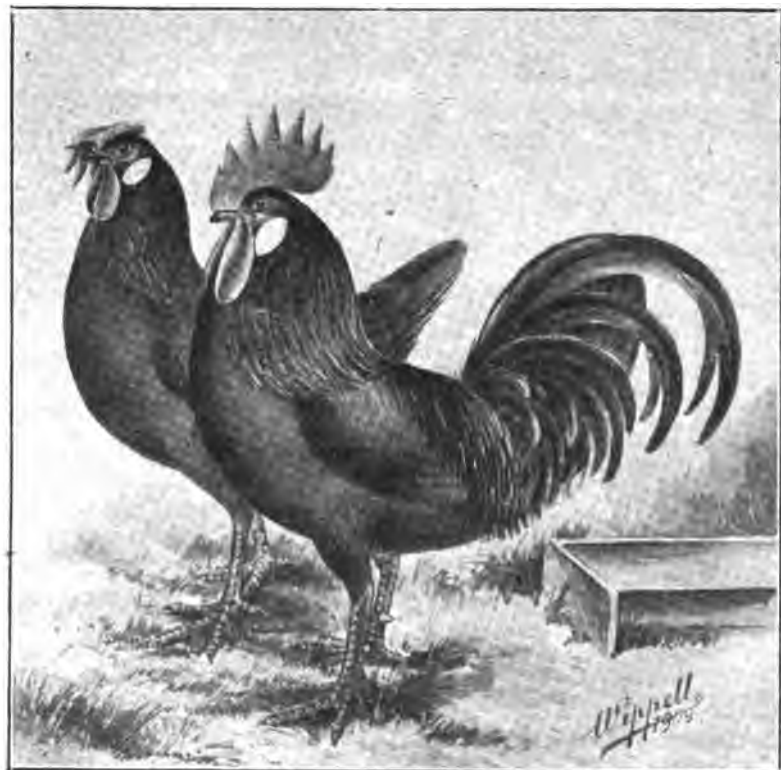
Sea-birds also, unlike land-birds, quickly return to their nests when they have been accidentally disturbed.

And now, as I do not wish to read in my morning paper next nesting season that wholesale accidents are happening by people—young people, that is—falling over cliffs, let me re-iterate my previous warning that this paper, though accurate as far as it goes, cannot give sufficient instructions to enable one quite ignorant of the subject to let himself go over a high cliff. This can only be given by practice, or the example of one doing so before the very eyes of the would-be climber.

Our Photo. Competition.

The photographs sent in October were exceptionally good and the prize of one guinea has been awarded to Miss E. M. Goddard, East Street, Feltham, Surrey, for her excellent study of kittens. A consolation prize of 7s. 6d. will go to Mr. J. T. Roberts, 114, Young's Road, Folkestone, for a good study of a pigeon and mouse.

Photographs intended for the December competition should have their titles and names and addresses of the senders written clearly on the back, and should be addressed "Camera Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.



Black Minorcas.

These are splendid layers and thrive in close confinement.

Profitable Poultry Culture.

By "CHANTICLEER."

The Minorca.

THE Minorca suits itself admirably to almost any condition of life and it is extremely doubtful if a better variety or breed of poultry can be recommended to the enterprising amateur.

It has always lent itself admirably to the fancier's or exhibitor's skill, which will doubtless account for the large abnormal comb with which it has long been associated.

The breed can be traced to the island of Minorca and is truly a Spanish variety; in fact it is even now designated the red-faced white Spanish; however, without going further into its history or actual origin, let me positively assert that the Minorca of to-day is perfect as regards type, shape, style or laying powers. It produces the largest sized white eggs for the minimum of food and if ever eggs are sold by weight the public will more fully appreciate this bird's advantages.

It is hardly a good table fowl on account of its small frame and great activity and may be described as essentially an egg-producing machine.

Its adaptability to close confinement has earned for this breed the sobriquet of the "back yard fancier's fowl," for it is astonishing in what excellent condition Minorcas can be kept, even in small enclosed runs, and they actually thrive better and lay more eggs in confinement than when allowed their liberty. If poultry keepers whose space is very limited and who keep the larger breeds, now with ill-success, turned their attention to the variety under notice we should hear fewer complaints.

Turning from the utility side I should now deal with the exhibition qualities and first state that the Black Minorca offers none of the vexed troubles of marked or varied coloured fowls, as it has a dense black plumage. The type is a cardinal feature and it will be seen from the illustration that we have squarish framed birds whose shapely upright body is well poised on good length legs, for a decided fault is a short-legged Minorca.

Further particulars respecting the Minorca will be given in the next issue.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

WHITE RAT, in captivity, gives birth to 17 young, all of whom are doing well.—(E. Green.)

WHITE-TAILED EAGLE caught in a net trap on November 23rd at Dame Lys, Watlington, Oxford, after killing two pheasants.—(W. J. Street.)

ROUGH-LEGGED BUZZARD shot lately at Acrise, Kent.—(Captain R. N. Pearson.)

NIGHTJAR seen and heard making its "gewick" cry round some trees at 4.45 p.m. on November 28th near Horsham.—(A. G. G. Thompson.) [This would be an extraordinarily late date for the nightjar; and "kewick" is the characteristic cry of female and young brown owls, one of which might easily be mistaken for a nightjar among trees in the dusk.—Ed.]

GREAT SPOTTED WOODPECKER caught in a trap by a boy at Liskeard, Cornwall, on November 29th. The bird was eventually released and flew away.—(W. Hammond.)

CORNCRAKES AND CUCKOOS unusually scarce this year in the Isle of Man.—(G. Storey.)

Birds on Migration.

HOUSEMARTIN, November 22nd, Romsey, Hants.—(W. C. Woods.) Uckfield, Sussex, November 21st.—(R. M.) Lewes, Sussex, November 20th.—(E. E. Dennis.) Fareham, Hants, November 15th.—(C. W. Colthrup.)

SWALLOW, November 26th, Romsey, Hants.—(Mrs. W. H. Hillier.) (or Housemartin) at Totnes, Devon, November 21st.—(A. G. Peter.) November 25th, Torcross, S. Devon.—(F. Price.) **GREAT-CRESTED GREBE** returned to Aldenham Reservoir, Herts.—(G. C. Hartley.)

STARLINGS, about 3,000 arrived near Liverpool with the northerly gale of November 30th.—(T. H. Cope, F.G.S.) **WOODCOCK**, arrived at Thomastown, Co. Kilkenny, Ireland, on November 27th.—(M. D. Haviland.)

WELLS, Norfolk, December 2nd.—(J. P. K. R.) **NOTES FROM S. DEVON**.—November 25th: Blackcap warbler, willow warbler, and several swallows. November 28th: Willow warbler and a fire-crested wren. November 30th: Curlews passing over in large numbers by moonlight.—(F. Price.) [Were not the "willow warblers" more probably chiffchaffs?—Ed.]

London Notes.

SPARROW, light grey specimen in Dulwich Park on December 2nd.—(C. Wood.) **SONGTHRUSH**, singing in Kensington Gardens on November 1st, on November 13th, and on subsequent days.—(W. P. K. Neale.) **SWANS**, four seen flying over the Round Pond, Kensington Gardens, on November 24th; they flew off in an easterly direction.—(W. P. K. Neale.)

Birds' Song.

SONGTHRUSH, **BLACKBIRD**, and **MISSLETHRUSH** reported from many parts of the country singing throughout last half of November.

MARKED BIRDS.—**BLACKBIRD** with white feathers on head in Christchurch Park, Ipswich, on November 20th.—(C. H. Lay.) One with several white feathers in each wing at Liscard, Cheshire.—(A. E. Davey.) A specimen, perfectly white, but for a few black feathers in wings and tail, has been in the grounds of Graylingwell Hospital, Chichester, since the spring.—(G. E. Peachell.) With white patch over his eye and white feather in left wing at Sidcup, Kent, Dec. 1st.—(B. K.)

Butterflies and Moths.

TORTOISESHELL BUTTERFLY flying at Lewes, Sussex, on November 23rd.—(E. E. Dennis.) Clifton, near Bristol, on December 1st.—(K. MacLellan.) **LARGE TORTOISESHELL BUTTERFLY**, November 27th at Windsor.—(G. Burrows.)

Plants.

THRIFT in full bloom near Southampton, November 29th. **BLACKTHORN** in leaf and flower at Baylham, Ipswich, at the end of November.—(C. H. Lay.) **RASPBERRIES** gathered on December 1st at Tunbridge Wells.—(W. George.) In flower and fruit at Edenbridge, Kent.—(D. Smith.)

Caddis Worms and Flies.

(Continued from page 71.)

along by means of its forelegs if its station in life was on dry land, but living entirely in the water, the mean specific gravity being nearly equal, it has little difficulty in getting about. Herein lies the reason why the worm attaches such awkward-looking pieces of wood to its sheath, increasing its buoyancy by this means.

Caddis worms do not stand alone in the art of making cases to better protect themselves against the onslaughts of their enemies, for certain moths, beetles, and other Neuropterous insects construct cases of a similar nature.

Without a protecting sheath for its delicate body, the caddis worm would stand a poor chance in the battle of life against many of the inhabitants of the pond, for it would be liable to attack on every hand and be little able to help itself.

Disciples of the "gentle art" know only too well the value of these little worms as bait to tempt the passing fish, and many thousands are sacrificed by the followers of Isaac Walton every year.

If the caddis worm is removed from its sheath and supplied with materials, it will in a short time construct another, and often in the absence of its ordinary building material it will, if given bits of glass, coal, etc., construct its sheath of these materials.

The mouth organs are very similar to caterpillars' and other vegetable-feeding larvæ, but it does not follow that they are always vegetable feeders, for they often attack and devour other aquatic larvæ and even attack one another.

The duration of life in the larval stage is several months, some species passing the winter in this stage, completing the metamorphosis in the following spring or summer.

When about to pupate, they close up both ends of the sheath with coarse silk or stones, leaving holes for the water to pass through, from which they derive their oxygen, and in this period of pupation undergoes its wondrous transformation, the nymph resembling very much the perfect insect in form.

When it is about to complete its third and last change, the nymph being able to swim comes to the surface, escaping from its case after the manner of a gnat or creeps out of the water up the stem of some plant, and extricates itself from its pupa case.

After resting for a short time, for its wings to dry, it sails off, maybe many miles, settling down by the side of some pond or stream, when it meets its partner, propagates its species, and shortly after this office dies.

The Week's Wild Life in Pictures.

(See page 79.)

"**WITCHES' BROOMS**" (1) are those curious clusters of twigs which form conspicuous knots among the branches of trees, and are liable to be mistaken at a distance for birds' nests or compact bunches of mistletoe. They are due to the attacks of a minute parasitical fungus, which seems to possess a secret

similar to that of the gall-fly: the power, namely, to compel its victim to grow with such perverted vigour at the point of attack as to provide the assailant both with shelter and abundant food.

2. The peacock is one of those butterflies whose appearances in midwinter are most often quoted as evidence of "the abnormal mildness of the season." This is probably due to a habit of choosing winter quarters which are more easily warmed by the sun than are those selected by other hibernating butterflies, such as the red admiral. No doubt, the underside of the peacock—which is all blackish-brown and rather glossy, while that of the red admiral is mottled with dull blacks and greys—is specially adapted to its winter hiding-place; but what place is this as a rule?

3. The wayfaring tree is really only a bush, but it adds a pleasant feature to the thickets and hedges of Southern England, with its conspicuous oval leaves covered with mealy down, its round heads of tiny white flowers, and, later, purplish-black fruit. In mid-winter, too, it is a tree of pleasant promise to the wayfarer, because its buds (note the flower-bud at the top) are so boldly preparing for the spring.

4. Why should this bird be called the "blackheaded" gull? Because its head in summer is all blackish-brown. In winter, however, its head is almost entirely white. This is the gull which comes ashore in winter and follows the plough near the coast. It is often called the laughing gull because its common note is not unlike a mocking laugh. When feeding, however, its note is a querulous little scream. You can always recognise the blackheaded gull in flight by the white edge along the front of its spread wings.

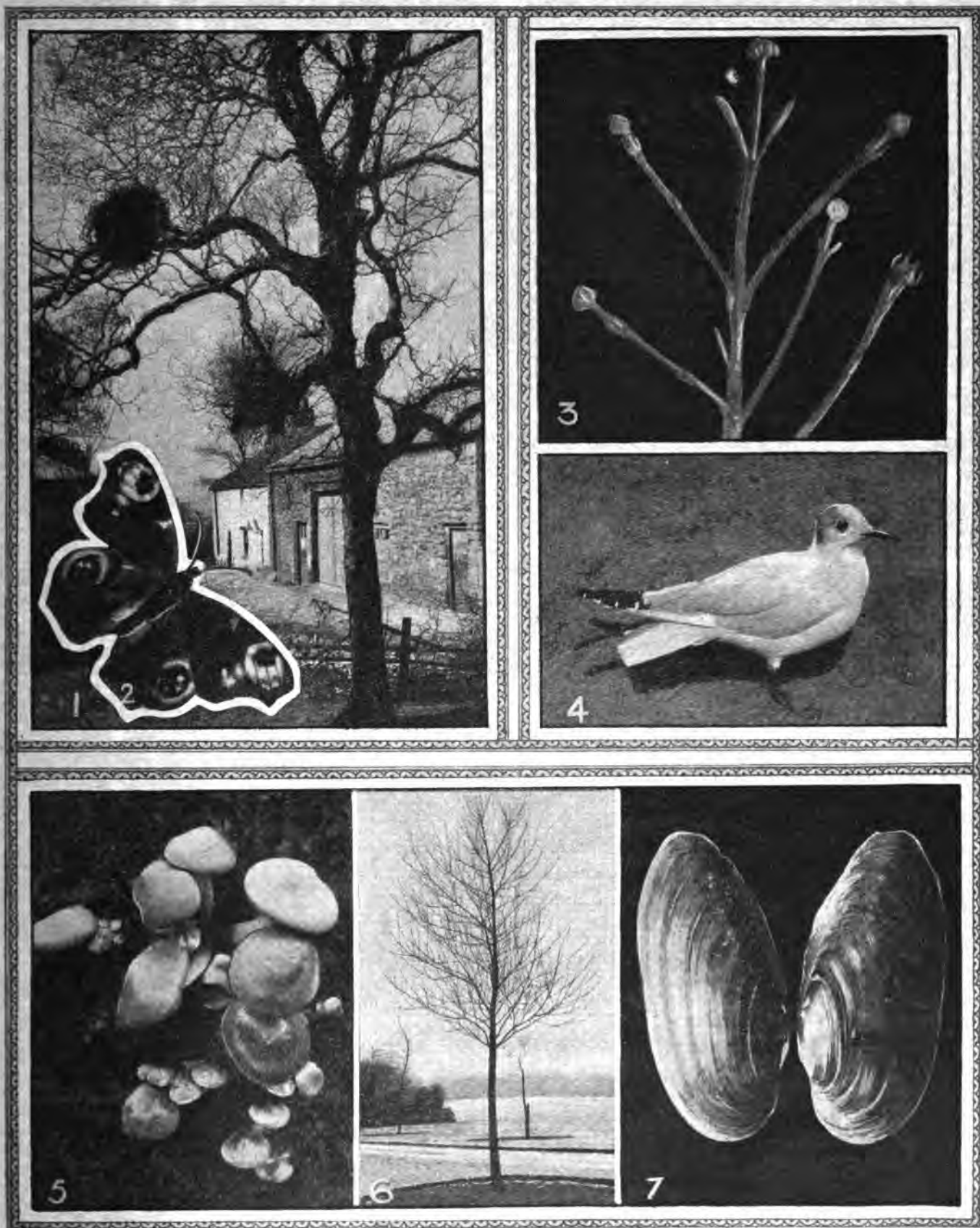
5. The sulphur-tuft, *Hypholoma fasciculare*, is a very common and poisonous fungus, growing usually on or about rotting stumps, logs, or posts, or among timber in woodyards. It occurs in dense clusters, and may be found practically all the year round—except the very severe weather—but is most abundant in the autumn. The characteristics are the warm yellow hue of the cap and the green gills. This colouring distinguishes it fortunately; because it is a very dangerous fungus, its poison being intensely virulent.

6. The study of trees in winter has its interest, because each kind has its characteristic habit of growth as well as its style of bark and method of forming buds. Very little observation is needed before one learns to distinguish the different kinds of leafless trees at sight. This figure, for instance, could not represent any tree but a young black poplar. No other tree has such uniformly tapering and upward-curving branches, giving to the whole tree almost the symmetrical outline of a poplar leaf.

7. Here is the commonest of river mussels, the Duck Mussel, *Unio tumidus*, which is rather thicker and less tapering than the Painters' Mussel, *U. pictorum*, and not so dark in colour as Pearl Mussel, *U. margaritifera*. These mussels are common in sluggish water, and are interesting in an aquarium, where they travel from place to place, making a furrow through the sand with their large tongue-shaped foot.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 78.)



1. "Witches' Brooms," caused upon trees by a fungus (Admiral Shaw). 2. Peacock Butterfly, *Vanessa io* (S. H. Saunders). 3. Buds of Wayfaring Tree, *Viburnum lantana* (E. J. Castle). 4. Black-headed Gull, *Larus ridibundus* (B. Hanley). 5. The Sulphur Tuft Fungus, *Hypholoma fasciculare* (Copyright). 6. Black Poplar, *Populus nigra* (J. H. Crabtree). 7. Common River Mussel, *Unio tumidus* (J. H. Crabtree).

Additions to the Natural History Museum.

By R. Lyddeker.

THE series of hybrid birds in the North Hall of the Museum has been increased by a specimen bred on the Didlington Hall Estate, Brandon, Norfolk, and presented by the Hon. Florence Amherst.

It is stated to be a cross between a hen pheasant and a domesticated cock; and is therefore the reverse of another hybrid bred at Didlington, of which the male parent was a pheasant and the female parent a cross-bred domesticated hen. This new hybrid is a large, dark-coloured bird, with a short tail, and the feathers of the breast showing pheasant-like markings, although without any bright colouring.

In the Lower Mammal Gallery visitors should notice a remarkably fine chita, or hunting-leopard, from British East Africa, as well as a very fine specimen of the African black-backed jackal, both given by Mr. Allan Cameron, who has also presented other specimens not yet exhibited to the public.

Both the hunting-leopard and the black-backed jackal are much finer specimens of their kind than those previously exhibited. The hunting-leopard is one of the few large mammals common to India and Africa. In the latter country it is always known to Europeans as the chita, but since that name is also applied in many parts of India to the leopard (*vide* Blandford's "Mammals of India," p. 67); the designation hunting-leopard is preferable. "Chita," it may be observed, is a Hindustani word meaning "spotted"; it reappears in "chital," the vernacular name of the Indian spotted deer or axis, and likewise in "chitra," the native name for one of the spotted soft-shelled river-tortoises of India.

For many years a very curious West Australian mammal, the rabbit-bandicoot, or "native rabbit" of the colonists, has been represented by an atrociously bad specimen, which, it is satisfactory to find, has now been replaced by one worthy of the collection, showing in perfection the beautiful chinchilla-grey colour of the fur.

The creature is, of course, a marsupial, and its chief superficial resemblance to a rabbit consists in its large ears and long hind-legs. There, however, the resemblance ceases, for in place of the short, thick tail of our "bunny," it has a comparatively long slender caudal appendage, grey at the base, then black, and finally white for its terminal third. The specimen is one out of a large collection from S.W. Australia recently presented to the Museum.

Visitors to the Reptile Gallery will notice a great alteration, the cast of the skeleton of the great Brussels iguanodon having been transferred from the Geological Department to find a place near Mr. Carnegie's famous diplodocus. The change is an advantageous one, since the public are thereby enabled to see at a glance the difference in the structure of the skeletons of the bipedal and the quadrupedal types of herbivorous dinosaurian reptiles.

Another addition to the same gallery is a beautifully-mounted head of the common

African crocodile from Lake Tchad, showing to perfection the terrible dental armature of these reptiles, as it has been set up with the mouth open. A series of crocodilean skulls has likewise been exhibited in order to show the gradual transition from the slender-snouted Indian gharial, through certain species of crocodiles, to the broad-nosed alligators and caimans of the New World. Not, by the way, that true alligators are confined to America, since a species exists in China. Whether Anglo-Indians will ever cease to call the crocodiles of their adopted land "alligators" is more than doubtful. Those who may visit the Museum have, however, no excuse for saying that they do not know the difference between a crocodile and an alligator, since this is now clearly shown in the gallery.

Useful Leaflets.—The latest additions to the admirable series of leaflets issued by the Board of Agriculture deal with ducks and duck breeding, No. 167; the formation of permanent pastures, No. 168; tree root-rot, No. 174; and the use of waste organic substances as manures. It is not too much to say that no cultivator of land should be without these leaflets, which are issued by the Board of Agriculture not only free of charge, but post free. For the series up to No. 100, bound in a volume, the price is only 6d. post free.

A Dainty Year-Book.—"Day Unto Day Uttereth Speech" is the title of the year-book of the Bible and nature, which has been compiled with rare judgment by the Hon. M. Cordelia Leigh, and is published by Messrs. Eyre and Spottiswoode at 5s. The plan of the work is to give for each day of the year a passage from the Bible dealing with some phase of nature, followed by a poetical quotation in which the same theme is illustrated and amplified. As the Bishop of Stepney, who contributes an introduction to the book, says, this method brings out in a marked way the richness of poetic beauty in the Bible language. The book is most delicately and daintily bound in white and blue and gold.

The Selborne Society.—The current issue of *Nature Notes* announces that during the absence of Professor Boulger in South America, the magazine will be edited by Mr. Wilfred Mark Webb, the Honorary Secretary.

The Keepers' Benefit Society.—Mr. William Whitmore, who has succeeded Mr. George Ratcock as secretary to the Keepers' Benefit Society, informs us that the offices of the society have been removed from 4, Carlton Street, to 235, Regent Street, London, W.

A Nature Lecture

THAT CAN BE GIVEN ANYWHERE BY ANYONE.

The Lecture upon "British Wild Life," prepared by Mr. E. KAY ROBINSON, Editor of THE COUNTRY SIDE, is of a very interesting character. It is issued as a pamphlet, price 6d. (by post 7d.), and can be read at any gathering of old or young, by anybody, whether he or she be a lecturer or not. This lecture goes with the "British Wild Life" Lantern Slides, but it is not confined to them and forms a splendid Lecture by itself. We commend it to all Secretaries of Natural History Societies, Masters of Schools, etc.

Write to LECTURE DEPARTMENT,
"THE COUNTRY-SIDE,"
2 & 4, TUDOR STREET, LONDON, E.C.

"DAILY MAIL"
The Naturalist's Daily Newspaper.

THE GARDEN.

Delphiniums.

FINE as delphiniums are when grown in large groups, they are simply magnificent when a whole border can be allotted to them. The effect is greatly enhanced if the different shades of blue, instead of being mixed, are kept together, arranged in irregular masses which merge into one another.

The finely divided foliage is always attractive—the object of the divisions being, as suggested by Lord Avebury, to allow a certain amount of light to reach the lower leaves as the sun passes across the sky—and the plants may almost be called perpetual flowerers, for if the stems are cut down as soon as the flowers fade fresh ones start up immediately. As in the case of all plants which are intended to occupy the same spot for a number of years, the ground should be deeply dug and well manured.

If the weather is fairly mild, delphiniums may be planted at any time during the autumn, winter, or early spring, but the sooner it is done the better. Slugs are very fond of the young shoots, and for this reason a layer of ashes over the crowns is often advisable. *D. nudicaule*, a species less commonly grown, is also very handsome, with red and yellow flowers.

As it is dwarf, seldom exceeding two feet in height, it may be effectively planted in front of the taller blue hybrids. One of the family—the common annual larkspur—occurs wild in cornfields in this country, chiefly in Cambridgeshire, but it is considered a garden-escape, and not a native.

H. C. D.

Winter Flowering Carnations.

AT the winter flowering carnation exhibition held at the Royal Botanic Gardens, Regent's Park, on Tuesday, December 4th, was to be seen what naturally took one in thought back to summer, and those present quite forgot that the wet days of November have only just left us, and that Christmas is only three weeks away.

In looking at the magnificent blooms of this favourite flower, one could not fail to notice the kinds in greatest demand, and the variety in colour of self-coloured ones was very charming, ranging from pure white through various shades of pink to deep crimson.

Among the white were "White Perfection" and "Lady Bountiful," and the pinks included a new kind, "Mrs. Burnett," a lovely shade of salmon pink, which will become a great favourite, being of that shade of pink that shows up so well by day or night. There were also that beautiful blush pink, "Enchantress," and the deeper pinks, "Mrs. Lawson" and "Nelson Fisher."

The crimson contained "President," "Harlowarden," and a new variety named "Britannia," which was awarded a certificate of merit. Our American cousins may well be proud of the varieties of "Tree Carnations" they have sent us.

G. W. P.

Correction.—In our issue of December 1st Poinsettia was mis-spelt "Pointsettia."

The Garden.

Campanula Trachelium.

A Pretty Flower for the Wild Garden.

THE Nettle-leaved Bell-flower (*Campanula Trachelium*) is often called the Canterbury-bell, but the latter name is usually applied to the favourite garden flower, which in its pink, white, and blue varieties, is known as the cup-and-saucer flower (*Campanula medium*).

The *C. trachelium* grows in shady places to the height of two feet, bears fine, bluish-purple flowers $1\frac{1}{2}$ inches long, and over an inch wide at the mouth, which bears a number of conspicuous hairs.

The stem, leaves, and often the sepals are roughly hairy, and in these particulars, as well as in its leaves, it differs from its nearest neighbour, the Giant Bell-flower (*C. latifolia*). The latter plant has ovate lower leaves, while *C. trachelium* is named the Nettle-leaved Bell-flower because of the remarkable likeness of its leaves to those of the stinging-nettle.

Children carefully avoid touching this and other plants—such as the Woundwort—when in the young state, because this shape of leaf is strongly associated with painful results. The plant bears a great number of tiny seeds, which grow freely if scattered in the wild garden, and in July they provide a good supply of Canterbury-bells for cutting.

Work for the Week.

Rhubarb and Seakale.

ROOTS of rhubarb, chicory, and seakale should be put in heat either in a shed or under a greenhouse stage where the temperature ranges between 50 degrees and 60 degrees, and kept fairly dark. It is not necessary to plant them, but merely to stand them side by side, and cover with old soil or farmyard manure. Only a few at a time should be placed under this treatment, every three weeks or so. The best flavoured rhubarb is grown in almost total darkness in a moist atmosphere.

Asparagus.

Asparagus may be forced on a manure hot-bed, covering the manure with six inches of light soil, and planting strong roots or crowns close together in this.

A temperature of about 65 degrees should be maintained, and the soil kept just moist, but not saturated. The grass is ready for cutting when about six inches high.

Crowns for forcing can be purchased from dealers, and these are preferable to those lifted from the asparagus bed.

If a greenhouse or heated frame is available the crowns can be planted in boxes and brought in a few at a time, so as to ensure a succession of "grass."

Fruit Trees.

Some time ago we named a few select sorts of apples and other fruits for planting now. To the apple should be added one known as James Grieve, which has won golden opinions this year as an early dessert sort of the best quality. It is not a keeper, like Cox's Orange or Ribston, but it is a grand apple in September and October.

Another good quality apple is Golden Winter Pearmain, which crops freely, is good to look at, keeps well, and is excellent either as dessert or when cooked. It is sometimes to be met with under the



Photo.]

The Nettle-Leaved Bell Flower.

It makes a very effective plant for the Wild Garden.

[Thos Fox.]

Carnations.

Carnations in pots require special care and attention at this time of year. They require all the air and light possible with protection from frost, and, most important of all, the soil they are planted in must be kept almost dry, and the atmosphere in the house or frame where they are growing as dry as possible.

Rust and spot, two of the worst of carnation diseases, soon develop on plants that are not kept as here recommended. Maggot, which causes the stems to swell and rot, is favoured by excessive moisture.

Badly-infested plants should be burnt at once, and all diseased leaves and branches removed wherever they are detected. Prevention is, however, the thing to aim at.

Watering.

In giving water to plants in greenhouses and frames at this time of year, there is a tendency to overdo it. Except for plants that are in vigorous growth, very little water is sufficient.

The absence of much sunlight and, consequently, of heat experienced in winter should lead to the reduction of the food supply, namely, of water, as plants that are doing little or no work, if overfed, may be said to suffer from indigestion and such-like ills, exactly as animals do.

Decorative Plants for Spring.

If not already done, a few good plants of such decorative things as polyanthus, wall-flower, saxifraga, auricula, and pink may be carefully lifted from the open ground, planted neatly in pots, and placed in an unheated frame to come on for the decoration of the greenhouse in spring.

Polyanthuses are especially good for this purpose, as they flower freely, and their leaves are healthy and vigorous when thus treated.

Auriculas, of the alpine section, as distinguished from the daintily-coloured and delicate show section, are very useful border plants which may be raised from seeds sown now and grown on in frames, to be planted in the border, etc., in May, where they will flower freely the same year.

If there are plants in the border already some of these may be spared perhaps to be treated as advised above, and after they have done their turn in the greenhouse they may be planted outside again. Alpine auriculas are as easy to manage as any of the primrose family.

It is also worth while to sow a few pots of mignonette now, so as to get plants in flower in May, when the odour of mignonette in the greenhouse is most pleasing.

"The Country-Side" in the Fiji Islands.—"It may interest you to know," writes Colonel M. Foster Ward, Upton Park, Slough, "that a nephew of mine who is Commissioner of Lands in the Fiji Islands writes: 'Do you know THE COUNTRY-SIDE? We get it out here and all find it most interesting.'"

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Due to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three coupons (similar to that on the back page), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Protective Resemblance?—Although there is some likeness in size and colour between the Grizzled Skipper butterfly and the day-flying Mother Shipton moth, I think it was only by accident that you found them together in a nook in Epping Forest. Both, probably, get advantage from their mixture of black and white, which makes them difficult to see in flight.—(to P. JOHNSON.)

Abortive Tadpoles.—The reason why your tadpoles never became frogs was that they were not supplied with animal food. As vegetarians the tadpoles continue to exist, but do not develop.—(to TRESKO.)

Combs Made by Grubs.—These small combs, which are often found upon stalks and twigs in summer, are made by a number of grubs of a tiny ichneumon fly, which have lived in-



Photo.]

[H. S. Colthurst]

Cocoons of Ichneumon Grubs.

side luckless caterpillars. When the ichneumon grubs are full-fed, they eat their way out of the caterpillar's body and spin their little cocoons, one upon another, like the cells of a honeycomb. Sometimes the empty, shrivelled caterpillar remains feebly alive for a little while, clinging to the twig.—(to H. S. COLTHURST, Exeter, and others.)

Catkins in Winter.—It is usual to find the half-developed catkins on the hazel at this season. They are prepared to bloom in February.—(to C. A. SPEYER.)

Identity of Shore Bird.—A common shore bird, which in flight appears whitish below and blackish above, with broad white inner edges to the wings, is the redshank. This is 10½ inches in length. It almost always whimpers loudly as it flies.—(to H. CLARK.)

A Large Fungus.—The large mushroom-like fungus, 10 inches across, with flat shaggy cap and reddish brown gills, is known as the shaggy pratelle. Some authorities say it is quite wholesome; but many people suspect it of being poisonous. Its Latin name is *Agaricus*, or *Psalliota villatica*.—(to A. W. COX'S.)

Fungi Identified.—Your fungus is most likely *Russula heterophylla*, but much too young to be certain about. If identification is correct, it is a common species, and edible. Your bird-nest fungus is, no doubt, *Cyathus striatus*, a common and distinct species. The rough exterior is a characteristic. Was the interior striated?—(to S. E. COOPER, Ashted.)

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

*All applications should be addressed to Miss G. B. NORREYS, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

Special Advantage for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches; 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 6a, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Badge.—The large number of members who have written to inquire the cost of the badge or to ask that one may be reserved for them will find an announcement under this heading so soon as the arrangements for the manufacture and distribution of the badge have been completed. I did not think it wise to proceed with this until members at large had had time to consider and criticise my design for it. One never knows what error or defect may be discovered in one's work, and when this is already cast in metal discovery is too late for remedy.

B.E.N.A. Motto.—"One touch of nature makes the whole world kin" has been suggested by more than one member as the motto of the Association; and it is proposed to adopt it, unless any member can give reason against it.

Help for Members.—**Gardening:** Mr. Albert Hillman, Ersham Villa, Hailsham, generously offers expert advice on all garden matters, free of charge, to amateur members of the B.E.N.A.

Free Distribution of Seeds and Plants.—**Calvary Clover** and **Campanulate Foxglove** (which has been much discussed lately): Mr. A. Hillman, Ersham Villa, Hailsham, has a limited number of seeds of the former and young plants of the latter which he will send to members enclosing a stamped and addressed cover with their application. **Great Mullein:** A few packets of seeds still left for distribution by Mr. T. E. Belcher, 24, Clephane Road, Canonbury, N. **Wild Foxglove:** Miss M. A. Poole, Alsager, Cheshire, will send seedlings to any member sending a stamped addressed envelope.

Identification of Specimens.—**Insects** in the Bromley District, Kent, will be identified and help given to beginners by Mr. G. Mackrell, 8, Sandford Road, Bromley.

Wild-Flower Seed Exchange.—Would it be possible to start a Wild-Flower Seed Exchange? I believe it would be well supported.—C. L. COLLENETTE, B.E.N.A. [Will any member undertake to act as honorary secretary of this Exchange?—E. K. R.]

Improving the Country.—I think I can promise to supply members with almost any number of larvæ of the small tortoiseshell, for introduction into suitable suburban places, where they have of late become scarce.—G. STOREY, King William's College, Isle of Man.

News from the Branches.—**Ipswich:** Two meetings have been held and a third is arranged for December 17th. The proceedings were enthusiastic and it was unanimously agreed, on the motion of the hon. secretary, not to draw upon the B.E.N.A. voluntary fund, but to have a small annual subscription to cover the cost of postage, notices, etc. The hon. secretary, Mr. Cecil H. Lay, 14, Silent Street, Ipswich, will be glad to hear from new members in the Ipswich District.

Manchester: Will all members of the B.E.N.A. in Manchester and district, who desire to assist in the formation of an active branch as a naturalist club, kindly communicate with the hon. secretary, Mr. A. E. Salmon, 83, Palmerston Street, Moss Side, Manchester.

Local Secretaries.—Readers living at any of the places mentioned below and desirous of joining the B.E.N.A. are invited to communicate with the hon. secretaries named:—

Gloucester District: For Gloucester, Cheltenham, Tewkesbury and Stroud, and the neighbouring villages of Higham, Minsterworth, Churchdown, Brockworth, Hardwick, Hampstead, Elmore, Sandhurst, Ashworth, Norton, Painswick, etc., the local hon. secretary is Dr. W. Hodges, M.R.C.S., L.R.C.P., etc., 38, Park Road, Gloucester.

Penzance District, Cornwall: For Penzance, Buryas Bridge, Sennen and all places west of St. Ives and Hayle, the temporary hon. secretary is Mr. Rowland G. Saunders, M.R.C.V.S., Rosevean, Penzance.

Affiliated Societies.—Secretaries of these are invited to send brief notices for publication:—**Hull Junior Field Naturalists' Club:** December 14th, 8 p.m. Paper by Mr. A. J. Moore, "Geology of Flambro' Head," at the Oddfellows' Hall, Hull.

Children's Holidays.—More names are wanted of members in country places who would be willing to conduct town children (sent into their neighbourhoods for a holiday) upon one or more rambles for the purpose of telling them something about the common objects of the country. The name, by the way, of one lady who has volunteered was wrongly printed as "Mr." Consuelo Walker, of The Common, Cranleigh. It should, of course, have been "Mrs." Consuelo Walker.

Exchange of Specimens.—In case it may not be found practicable to establish collector's exchanges in all departments of natural history, members who desire to exchange duplicates are invited to notify the same, so that, in the next issue of the List of Members, distinguishing marks may be put to their names, thus enabling collectors in different parts of the country to communicate with each other.

A Mixed Bag.

Cock and Hen Partridges.—To distinguish the sexes of partridges one must look at the median wing coverts; in the male these have a single upright buff streak, in the female there are, besides this streak, two or three cross bars of buff.

Peculiarities of Grouse.—It is said that grouse will come to a field which is sown with corn for the first time much more eagerly than to one which has been sown several times.

Out of its Element.—The mole cricket, though a vigorous burrower, is apparently quite helpless when brought to the surface, and makes no effective effort to escape.

A Pretty Scene.—Kearton once witnessed a cock robin who had fed his mate to repletion take the food which she refused and give it to some young song thrushes in a nest hard by.

A Lethargic March.—Marked individuals of the Galapagos tortoise having been watched, it has been estimated that they usually travel at the rate of about eight miles in two or three days.

A Hairless Calf.—A calf which was recently born at Coat, Martock, Somerset, was about the usual size but quite hairless, except for a few stray hairs in each of the ears.

"Worm-Grafting."—"It is possible," says Mr. O. H. Latten, "to cause the two severed portions of a worm to unite, or to graft the head portion of one on to the tail portion of another."

The Partridge's "Rusty" Note.—The creaky note of the partridge is described by Tennyson as being:

Like a rusty key
Turned in a lock."

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 84. VOL. 4.

DECEMBER 22, 1906.

1d. WEEKLY.

Some Hidden Wonders of the Plant World.

BEAUTIES REVEALED BY THE MICROSCOPE.

By H. SCHERREN.

THE structure of plants is to the full as wonderful as that of animals. Though most of it is invisible to the unaided eye, some of the arrangements and contrivances may be so made out, and better still by a small hand lens.

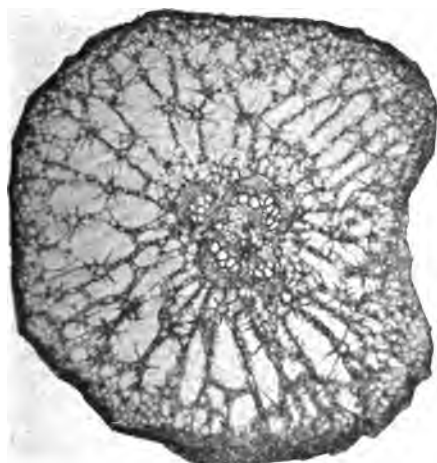


Photo.] [J. J. Ward.
Transverse Section of the Stem of an Aquatic Gentian.

Practice of this kind, with some rough section-cutting, will contribute not a little to the better understanding of text books, and the later examination with the compound microscope of slides by professional mounters, such as those from which our illustrations have been made.

In the skin—technically, the epidermis—of the orange there is a series of cavities



Photo.] [J. J. Ward.
Longitudinal Section of Orange Peel showing Oil Cavities.

containing an ethereal oil, to which the fruit owes its fragrance and which is the basis of a well-known perfume.

The oil develops from a group of cells, which gradually become disorganised by the absorption of the cell walls, beginning with those in the centre, the result being the formation of a cavity which serves to contain the odorous secretion.

Flowers owe their perfume to the essential oil in cavities of a similar nature in the petals. Without artificial aid it is quite easy to see these cavities in a section cut with a pocket-knife from the rind of an orange or a lemon and a hand-lens will bring out the surrounding structure to some extent.

It is astonishing how much good work can be done with simple tools and appliances. Kitchen Parker cut his sections with a razor, and yet, in Huxley's phrase, he "wrote anatomy for anatomists."

The other illustrations elucidate stem-structure in flowering plants. We must remember that these are divided into Dicotyledons, which have two cotyledons or seed-leaves, and Monocotyledons, which have but one such leaf.

The clematis, cherry, and villarsia belong to the first group. Incidentally we may mention that the butcher's broom is our only Monocotyledon with a woody stem, all the rest being herbs.

Stems have two functions—to bear the leaves, and convey to them the nutritive solutions absorbed by the roots. Though usually circular in transverse section, they may be angular, as in the clematis and butcher's broom.

They differ also in character, the former being herbaceous, and the latter woody.

In the clematis one may make out the dark outer region, or cortex, the internal ground tissue, in the centre of which is the medulla or pith, and the vascular bundles—the dark triangular groups of cells projecting from the cortex into the ground tissue.

The bundles consist of a large woody inner portion, in which the spiral vessels are situated, and an outer portion of bast. The white spaces in the bundles show where the spiral vessels have been cut across in making the section. As the bundles run parallel to the cortex they form a ring in transverse section.

They do not, however, extend from root to apex, but pass out into the leaves or branches as the case may be. Water containing nutritive salts is driven

up through the spiral vessels, and so into the leaves, where the solid matter is

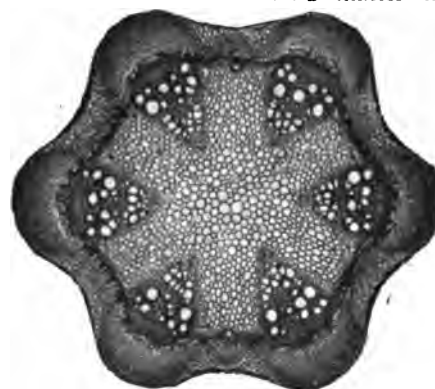


Photo.] [A. M. Kelly.
Stalk of a Clematis cut across and magnified.

worked up into plant food, and the liquid makes up for the water lost by transpiration.

The section of the cherry stem shows an older growth in which a correspondingly greater development of wood has taken place. This is separated into wedges by the medullary rays which appear as white lines running from centre to circumference.

In the aquatic gentian (*Villarsia nymphaeoides*) one may easily identify the central pith, round which are ranged the vascular bundles. The points of interest in



Photo.] [J. H. Crabtree.
Section of Cherry Stem.

the section are the large amount of loose tissue between the bundles and the cortex and the idioblasts, or star-shaped hairs which project into the intercellular spaces.

Country-Side Notes.

Warham, Norfolk.

*There lives and works
A soul in all things, and that soul is God.*
COWPER'S "Task."

I WOULD earnestly draw the attention of all who are interested in the education of the children of to-day to the announcement in our B.E.N.A. column of progress made with the scheme of "Schools Mutual Aid." I do not think that it is possible to exaggerate the prospective advantages of the development of this scheme; and of its immense success I have no doubt whatever. Indeed, I venture to predict that those schools which do not apply early for inclusion in the initial programme will have reason to regret it.

Its primary object is to supply the children of town and country schools with those materials of education which each most sorely needs and the other can most easily supply. To the city-bred child it will bring, fresh from the country, all the interesting natural objects that, unless they are seen and handled, would remain dry details of "nature-study" text-books, unrealised and distasteful. To the village urchin it will bring a wider knowledge of the world, a conscious sympathy with life beyond the village—a feeling of citizenship of a great empire.

When the scheme shall be working at full blast each village child in Cornwall, say, will be placed, for a school-term at a time, in direct communication with the life of London, of Birmingham, and of Manchester, of Scotland, Ireland, and Wales, of Canada, India, and Australia, and so on: while each school child in every unit of the Empire will enjoy the same wide range of interesting exchange of "mutual aid." And it is a scheme from which private secondary schools—the class of school which is described as "for the sons (or daughters) of gentlemen"—will not wisely hold aloof.

These would not, of course, be linked with the State-aided schools, but only with schools of their own class. Yet no less advantage would accrue to them from communion with other schools in all parts of the Empire in turn. At present, of course, the scheme is in its infancy; but it gives indications of being a lusty infant, and now is the best time for school managers and schoolmasters to apply for inclusion in its first development. Especially I hope that applications will come in from the Colonies and India, as well as from Scotland, Ireland, and Wales. Will those distant readers who are interested in the welfare of our race and who think well of the scheme, bring it to the notice of the schools in their neighbourhoods?

It is snowing as I write, and by the time this appears in print we may be suffering Arctic severities of weather; but nothing which may happen hereafter can alter the fact that the first week of December, 1906, was for all practical purposes a genial combination of autumn and spring. Thrushes, missel-thrushes, and blackbirds were singing; bluebottles, butterflies, and wasps were still abroad on

the late ivy blossom by day; and by night several kinds of moths and innumerable gnats came to the lighted windows, where the spiders were still spinning webs to catch them. Bats flitted abroad at dusk; a linnets nest with eggs was reported from High Wycombe; and among our "Nature Records" in this issue appears a list of wild flowers which is positively absurd for December; while in some parts of the country ripe blackberries and raspberries were still being gathered, and blossom appeared on strawberry plant and apple tree. Many years will probably pass before we shall see in December such a complete mixture of all seasons except winter.

Further interesting confirmation of my theory that birds on migration simply go with the wind is afforded by the records of swallows and house-martins seen in different places during the last few days of November, and, in one case, in early December. For it will be noted that all these records come from the coastline—from Dover in the south-east, to Cornwall in the far south-west, and round to Liverpool in the north-west. Thus we seem to see how the wind, which should have carried these swallow-birds from Eastern and Central Europe towards Africa, had been deflected northwards and, sweeping round the coasts of Britain, had enabled a few misled swallows to reach land again. On no other theory of migration can it be explained why swallow-birds should thus almost simultaneously re-appear on British coasts at points so far apart as Kent, Cornwall, and Lancashire, but nowhere inland. The same theory satisfactorily explains how such European birds as black redstarts, wall creepers, etc., are brought to our southern coasts in winter.

To explain these re-appearances of the swallow-birds was always the great obstacle to those who believed—as many naturalists do still—in the migration of birds by some mysterious guiding power or "sense of direction." It put them at a disadvantage in argument with men of the older school who believed that swallows and martins hibernate in Britain. To these it seemed natural that when a spell of warm weather occurred in late autumn a few swallows should be tempted out of their hiding-places for a few days; whereas the others were obliged to content themselves entirely unable to explain such irregularities of migration as the sudden appearance of swallows on our coasts weeks after the last of them seemed to have left the country.

By my simple theory, however, these irregularities of migration easily explain themselves as the result of irregularities of the winds, and the fact that the re-appearance of the swallow-birds late in autumn almost always coincides with spells of unseasonably warm weather similarly explains itself, because the same unusual winds from the south, which bring the warm weather, bring the birds with it. I do not wish to appear to insist unduly upon this theory of mine; but I am so confident of its correctness and have found

it so useful and satisfying when puzzling problems of migration present themselves, that I wish all readers to share it.

Every now and then, of course, we come across a record which will not admit of easy explanation. One such, for instance, appears this week in the report of a nightingale seen by no fewer than four observers, two of whom are experienced bird-fanciers, near Banbury, in Oxfordshire. The nightingale leaves us too early, I think, for any wind to be able to bring it back at the end of November; and, if it came back at all, it would surely halt near the coast. Therefore one is inclined to suppose either that the bird seen in Oxfordshire was one which had escaped or had been released from a cage, or else that it was not really a nightingale, but an abnormal robin with a pale breast. I confess that, if I were to see such a robin, I should confidently assert that I had seen a nightingale. The record has, however, been brought to the notice of a skilled local ornithologist; so we may expect to learn more about it before long.

Before leaving this subject of the unusual occurrences of the late autumn of 1906, it is worth while to note that—as has happened several times in recent years—the old beliefs that the abundance of berries and the early arrival of migrant birds from the north presage an early, as well as a severe, winter have been abundantly contradicted. Seldom have there been such stores of berries; seldom have such early records been made of the arrival of foreign thrushes, finches, waterfowl, and shore-birds from the north; yet seldom, very seldom, has such warm weather been prolonged until within three weeks of Christmas. There is time, of course, for the winter of 1906-7 to be severe, but not for it to be "early"; and, even if the winter should be severe, it will not be easy to connect the arrivals of wild geese, redwings, and bramblings in September with the weather three months later.

On the other hand, it is easy to understand that the early arrival of birds from the north was due to the same favourable conditions during the breeding season, which enabled our own birds to nest and rear families earlier than usual. In the same way the plenty of berries must be ascribed to preceding favourable conditions, such as the prolonged fine weather in the late summer of 1905, which enabled the berry-bearing trees to ripen their wood thoroughly. It is difficult to remember always that every effect in nature has its cause in the past; because it is so much easier and pleasanter to regard things as happening with a beneficent view to the future. In our "Week's Wild Life" the other day, for instance, I repeated without question the generally accepted statement that the December moth will "lie over" from year to year in the chrysalis stage, if the weather is unsuitable at the ordinary time of emergence. This seems so natural and reasonable a cause for the delay that one accepts it without hesitation; yet it is quite wrong.

In the "Week's Wild Life" of this issue reference is made to the "tawny or wood" snail, *Helix arbustorum*; and it seems a rather interesting coincidence that the same epithets should apply to the "tawny or wood" owl. Which, again, of the long-billed birds is so "tawny" in colouring as the "wood" cock, or of game birds as the pheasant, haunter of woods? The wood mouse (also called the long-tailed field mouse) and the bank vole, which is really a wood vole, are similarly distinguished from the common mouse and the common vole by their tawny colour. To understand the meaning of this coincidence between tawny fur, feathers, or shells and residence in woods you have only to look at the tawny layers of dead leaves with which every wood is carpeted in these bare winter days. And at once, of course, you will think of the fox and the squirrel, the stoat and the weasel, and the dormouse, as well as the thrush, the robin, and the wren among birds, and most of the moths which hide through the winter, as further proof of the utility of tawny dead-leaf colour to all creatures which haunt woods or other places where the dead leaves lie.

* * *

A good instance of the appearance of plants in unexpected places comes from Manchester, where the heaps of rubbish and ashes which for two years have marked the site of a burnt warehouse in the heart of the city were discovered the other day to be bearing a crop of young bracken ferns. How they got there is the puzzle; for the place had been closed since the fire occurred. One ingenious suggestion was that the spores of the fern were contained in the water which the firemen poured upon the smoking ruins; but a more likely theory is that a piece of bracken was blown from one of the market carts which pass near the site. Bracken is, of course, commonly used in the country as packing for vegetable produce; but it is so essentially a wildling of heath and wood as to be almost the last plant which one would expect to discover in the centre of a city. Manchester air must surely be fresh and pure.

* * *

In THE COUNTRY-SIDE for October 27th was a query as to the most merciful way of dispatching wounded birds; but I regret to say that, in spite of a very large number of answers received, there is no definite result. Many have recommended pressure on the breastbone, either by the hand, or, in the case of large birds, the knee. Others hold that there is nothing quicker, and, therefore, more merciful, than a smart blow from a stick on the back of the head. A man does not, as a rule, however, carry a stick when shooting; so some advisers recommend striking the back of the bird's head against the gun barrel or the toe of the boot. There is a little pocket instrument—invented for the purpose by Colonel W. L. B. Coulson—which acts directly on the brain; but the Colonel himself uses a small silver knife, which kills a bird almost instantaneously when thrust upwards through the roof of the mouth into the brain. It is not, of course, necessary to open the bird's mouth in doing this. The knife can be thrust upwards from below the bill—this, at least, is how I understand the instructions given. Crushing a bird's skull between the teeth

means instantaneous death, provided the brain is crushed; but the plan is too barbarous and repulsive to be generally adopted.

* * *

To stab the bird to the heart "with some slender instrument thrust in under the wing" is another method recommended; while a rough-and-ready but very effective plan is that adopted by some sportsmen and gamekeepers, who always pierce the bird's brain from the base of the skull behind with the quill of a flight feather. It would, of course, be a prolonged business to pull a flight feather from the wing of the bird itself: so one must hope that this would always be taken from a dead bird and kept in readiness for use upon the next wounded one. But, after all, the point of a quill is a very blunt weapon: and to kill a partridge in this way must be very like killing a man by forcing a walking stick into the back of his head.

* * *

Indeed, reviewing the whole voluminous correspondence before me, I am inclined to think that, for killing wounded birds up to a partridge in size, the best plan is that recommended by "H. M.," namely, to throw them forcibly against the ground. For birds larger than a partridge up to the size of a duck, the most sudden death is probably secured by striking the back of the head violently against some hard object; and for larger birds, such as geese, by kneeling upon the breastbone. If any readers dissent from these conclusions, will they kindly send me their reasons? I think that this is a question which, having been raised and freely discussed, ought not to be dismissed without a definite and, if possible, a unanimous decision.

* * *

A correspondent sends me a cutting from the *Wide World Magazine* describing how a "shovel-nose shark" in Australian waters was discovered to have swallowed twenty-seven of her young ones for their protection: and he suggests that this might imply either that M. de Rougemont had returned to the scene of his former adventures or that, if Australian sharks swallow their young, it would be natural that British adders should do the same. There is, however, no need for us to adopt either alternative. The so-called "shovel-nose shark" is not a shark, but a kind of ray which produces its young alive; and this habit, which the adder possesses also, has led to the same mistake. What happened no doubt was that when the huge and savage fish was hauled in with violence, two or three young ones fell from her; and when she was cut open the rest were found alive, just ready to be born.

* * *

What seems very like a *reductio ad absurdum* of these swallowing stories is contained in a cutting which Hastings readers send me from the *Hastings and St. Leonards Observer*:—

"A man was trenching up a field last week, and on turning up a big shovelful of soil his attention was attracted to a huge earth worm which lay on the ridge with three young ones coiled near its mouth. He touched it, and was somewhat struck to see it raise itself up and the little ones instantly disappear down their mother's mouth. The digger has been for several years engaged upon the soil and has

never before seen such instinct displayed by the lowest form of life for the defence of its young."

Even those who believe that adders or "shovel-nose sharks" swallow their young may be inclined to smile at this eye-witness's narrative of the alleged achievement of an earthworm; but, as a matter of fact, the worm is just as likely as the snake to perform the feat.

* * *

The lengthening evenings are the time for indoor games, and one very good country-side fireside game to play is that of "planting." In its simplest form the game is played in a semi-circle round the fire, when anyone to whom an idea occurs will say, "I planted such and such a thing, and what came up?" There must be a connection between the planting and the crop. Thus, if the player says, "I planted my hand," the answer might be "A palm." To "I planted a fire," an obvious answer would be "An ash"; and the planting of a comic paper would naturally be followed by a crop of "chestnuts." In every case the object is to ask a question which, with a little play upon words, admits of a more or less horticultural answer.

* * *

Sometimes, however, by playing more boldly, greater fun may be introduced into the game. Thus, if one put a question:—"I took up a paving-stone in Piccadilly to plant some mignonette seed; and what came up?" the answer "A policeman" would well serve its purpose of amusement. In the same way I am sure that a very funny answer must be possible to the advertisement which a reader has cut out of the *Brighton Herald* for me. It appears in this way:—

GARDENING.

18 Electric Bulbs, 5's, 8's, used month, 4½d. each.—W., *Herald Office*.

Now, what I want to know is—if you planted these bulbs in your garden—what WOULD come up?

E. Kay Robinson.

The Tramp.

Down the still lane they come in fearful wise
And pass, with gaze averted, from our ken;
Rogues some, but most the broken worthless
men

With depths of hungry longing in their eyes.

Writers have written of the white road's call
Loud to the vagrant's truant blood "Away!"
Wise men have hailed him master of his day,
Who, passing all things by, possesses all.

But I have seen him, worn and hungry, when
He rose at morning from his chance-found
bed

To face the hopeless day. And I have said,
"God have in pity all poor homeless men."

F. W. SAUNDERSON.

Blackie's Nature Knowledge Diary.—Under this heading Messrs. Blackie and Son have issued at 6d. a blank form of diary arranged by Mr. Perceval Westell.

Recommended From Afar.—Col. M. F. Ward, living at Slough, writes that THE COUNTRY-SIDE has been recommended to him by a relative who finds it a most interesting weekly paper. The recommender resides in the Fiji Islands.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Snail Shells Turned the Wrong Way.—These are worth, I think, a good deal. When I was a boy at Uppingham school a fellow scholar, 40 years ago, found one and the British Museum had not one then and (it was said) offered £5 for it. To-day it is still in the school museum, known as "Gills' shell," a small shell going the wrong way round.—H. STANLEY MAPLES, Spalding. [Of course there are some kinds of snail shells which turn to the right and others to the left; but specimens which disobey the rule of their species are of course rare. One would, however, like to have more precise data regarding "Gills' shell" and the offer of the British Museum. Perhaps some one who knows Uppingham school museum to-day can enlighten us.—E. K. R.]

Self-Strangled Birds.—Your note re peculiar accident to greenfinch reminds me of an incident that occurred in Endcliffe Wood, Sheffield, some years ago. I was walking in the wood when I saw a bird performing strange antics, rolling over and over on the path in a most incomprehensible fashion. I ran after and caught it, then made a careful examination. It was a puzzle to me. At first I thought there was some malformation; but, reflecting that it could not have lived in such a state, as other birds would refuse to feed so useless a creature, I tried to make out what had happened. I had never heard of such accidents, but I found the head firmly fixed between the long feathers of the left-hand wing, right up against the bone. With great difficulty, and with much danger of dislocation as far as the neck of the poor bird was concerned, I released its head from chancery. For a time it lay panting in my open hand then fluttered away to a low bush. I again approached it, when it flew into a tree and joined its feathered companions, who all twittered their congratulations. This bird was a hen hedge-sparrow.—(Rev.) G. W. CRUTCHLEY, Milton Place, Halifax.

An Unseen Fisher.—Walking after dark by the river I heard a loud splash and immediately after a noise that sounded like a dog shaking itself and then absolute silence for the space of about two minutes when the same thing occurred. The second silence continued as long as I was within hearing. My companion thought the noises after the splashes were more like those made by bird's wings. The river is very shallow, hardly reaching the depth of a foot. I do not think it could have been an animal for would it not have made some other sound either before or after what we heard? It was more like a bird dashing into the water after fish and then flying away. UNA D. DUNN, Blanchland Vicarage. [What was heard was almost certainly a heron fishing. This bird makes a deep plunge after fish, almost disappearing from sight; and then quickly steps ashore with flapping wings to eat what it has caught.—ED.]

Marsh Warbler in Wilts.—In 1905, while at Marlborough College, I found two nests which I am sure were Marsh Warbler's, both containing four eggs. There was also another nest found which I did not see, though I saw the eggs. These nests were quite close together in a small copse. This year I revisited the place but found that the undergrowth had been cut down and failed to discover any birds. I compared my egg with those in the South

Kensington Museum and saw it was identical with the Marsh Warbler's eggs there.

At first I thought they were varieties of the Reed Warbler, but three facts tend to show that I was wrong: First, that the copse was fully half a mile from water and on the top of a hill; secondly, that the nest was made of dry bents of grass and much shallower than that of a Reed Warbler; and, thirdly, that the eggs of all three nests were the same. I would be much obliged if you would let me know if any other instances have been recorded of the Marsh Warbler breeding in Wiltshire.—T. L. BOURDILLON, Corpus Christi College, Oxford.

Between Caterpillar and Moth.—Nothing is really more interesting in nature than the wide difference of devices adopted by different moths and butterflies to get safely through the dangerous period of sleep as a chrysalis.

at the tail of the caterpillar dwindles in the chrysalis to a small point, because it is not wanted in the moth at all. The last figure represents a very common type of cocoon, being merely the tough silken bag which the "looper" caterpillar of the very common but beautiful brimstone moth spins near the ground, attaching it to any suitable support.

Noises of Butterflies and Moths.—The December moth makes a distinct buzzing noise somewhat like that of a bee or a blowfly.—L. ATTWATER, Bromsgrove, Brentwood.

Curiously Marked Sheep.—A ewe belonging to a farmer in this district has her face equally divided into two colours. One half is white and the other black. She is a half-bred ewe and, looking at her from one side, she is an ordinary white-faced sheep, but from the other side she belongs to a black-faced breed.—E. MILLER, Acklington, Northumberland.

Insect Migration.—This year the Humming Bird Hawk moth and the Striped Hawk moth have both been more abundant than usual; but, on the other hand, it has not been a Clouded Yellow year. I should imagine that the abundance of Striped Hawks was caused by winds from the Continent; as, I believe, Striped Hawks have scarcely been known to breed in England at all. Yet this does not seem to have been the cause of the abundance of Humming Bird Hawk moths; because here, in the Isle of Man, where they have also been plentiful, every specimen that I have seen, caught this year, has been half an inch shorter in wing expanse than a typical English specimen. This seems to show that the abundance of Humming Bird Hawks has not been caused by wind, since most true Manx lepidoptera are slightly smaller than their English relatives.—G. STOREY, King William's College, Isle of Man. [The foregoing suggests two interesting questions: (1) Whether this year's Humming Bird Hawk moths have been smaller than usual in other parts of Britain; and (2) Whether, if so, this indicates that they were bred on the Continent and brought over by the wind.—ED.]

Birds in a Town at Night.—

About 8 o'clock p.m. on November 21st, my attention was drawn to a crowd of people gathered round a large tree which is situated in the centre of the town of Walsall, the police keeping the foot-path clear. The people were looking upwards into this tree and, to my surprise, there were about four dozen linnets roosting there—a rather peculiar attraction, right in the centre of the town.—J. W. MARR, Walsall. [The birds had no doubt been attracted and dazzled by the lights of the town and were lucky to find the tree.—ED.]

How the Fox Kills.—On nearly every one of a number of chickens which a fox killed, there was only one wound. This could only be found by hunting amongst the feathers of the neck. The fox evidently kills by simply making its teeth meet in the neck of the bird.—UNA D. DUNN, Blanchland Vicarage.

Late Wasp Workers.—On November 11th I dug up three wasps' nests and there were still workers busy in all of them and in one I killed seventy to eighty new queens and upwards of one hundred and fifty in the three nests. This shows how many swarms could be prevented for another season if people would only take the trouble to turn up nests late in the season.—W. HALL, Basingstoke.

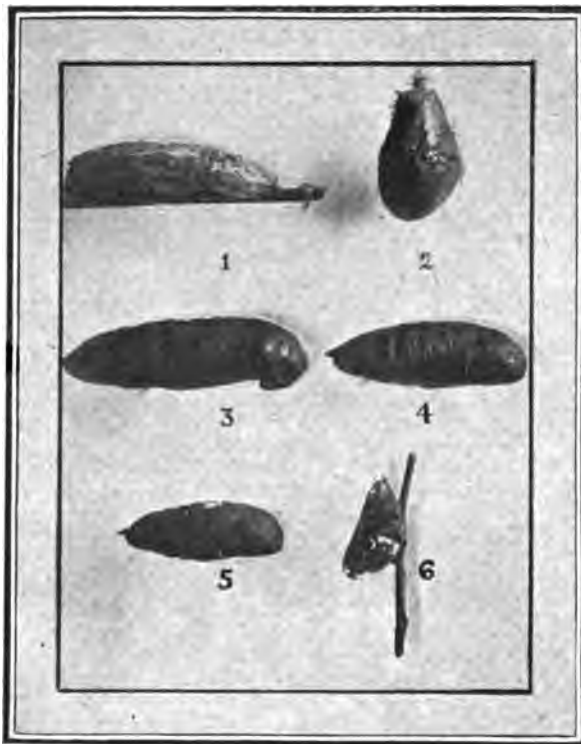


Photo.]

[E. Petrie.]

Types of Cocoons and Chrysalids.

1. The Drinker Moth (*O. Pokutoria*);
2. The Emperor (*S. Pavonia*);
3. Privet Hawk (*S. Ligustri*);
4. Eyed Hawk (*S. Ocellatus*);
5. Poplar Hawk (*S. Populi*);
6. Brimstone Moth (*R. Crataegae*).

Here are a few common samples. The drinker moth caterpillar makes a long pillow-case of glossy yellow silk (1) fastened lengthwise to a stalk of coarse grass. The moth pushes its way out at one end, although the crossed silks have prevented any enemy from pushing its way in. The emperor moth caterpillar constructs a cocoon exactly like an eel-trap, with the difference that the strands at the bottle-neck of the trap converge outwards, making it impossible for anything to get in but easy for the emperor moth to get out when the time comes. The hawk moth caterpillars bury underground and make no cocoons worth mentioning; but the privet hawk chrysalis (3) is remarkable for the sort of folded trunk under its head, which contains the long proboscis which the perfect moth will carry. It is very curious that this organ and its case should thus appear when the caterpillar sheds its last skin, seeing that the caterpillar itself has nothing of the kind. The eyed hawk and the poplar hawk (4 and 5) have not this feature; but they exhibit the transition stage in which the conspicuous horn

Ribbon-growth in Holly.—To the observant eye the Christmas decorations often afford interesting subjects of nature-study, and certainly the holly could not do better than grow "ribbons" for decoration. It is interesting



A Christmas Freak.

A good specimen of "fasciated" holly.

that these ribbon-growths seem peculiarly liable to occur on trees which have smooth bark on their branches, as holly, ash, willow and sycamore. As, too, the ribbon-growth is manifestly the fusion of a number of growing twigs it would seem that smooth skins more readily coalesce than rough ones.

Maternal Instinct of Field Mouse.—When out for a walk one afternoon I came across a field mouse's hole and began tapping it with my umbrella. The mother mouse ran out of the hole with two baby field mice in her mouth. Seeing me she raced back to the hole but dropped one just outside. About ten seconds later she came out of the hole, looked at me for a few seconds, then, picking her young one up, returned down the hole without showing any signs of fear.—J. RUMNEY, Repton.

Rearing Tortoises.—In THE COUNTRY-SIDE dated November 17th there is an excellent photograph of two Algerian tortoises and their eggs. It is fairly common for pairs of tortoises to produce eggs in captivity, but I have never heard of the eggs being hatched, and it would be of great interest to know the simplest way of incubating the eggs by artificial means. For the benefit of those who are interested in tortoises and would like to purchase "mates" for their pets which may be living in single bliss, I may say that the sexes of the common tortoise are easily determined, the under part of the carapace of the male being concave in form, while that of the female is flat.—DOUGLAS MOODY, West Green.

Tit and Sparrow Guests.—We are in the habit of hanging out some pieces of fat for the tits, and on November 11th we were much interested and surprised to see one (doubtless a great tit.—Ed.) perch on the bough, reach down, seize the string in his beak and tuck it under his claws, then take hold lower down and repeat the performance. With a third pull he got the meat on to the bough and made his meal. When the fat dropped again, he flew down to it and ate some more, clinging on to it in the usual way. Now and then a sparrow will fly up and get a mouthful by hanging on with his beak, sometimes turning round like a joint on a roasting-jack.—P. W. WRIGHT, Barnes.

Cruelty to Hounds.—May I be allowed to briefly reply to your correspondent on the above subject in a recent issue of THE COUNTRY-SIDE. As a lover of dogs, having kept a large number during the past fifty

years for companionship, sport and protection, I can quite enter into his feelings as to the severe punishment meted out to the hounds in question; but at the same time there is another side to the question. It is, unfortunately, a well-known fact that a dog who once acquires a habit of "running sheep"—not sheep-worrying (a very different matter)—can only be deterred by the severest punishment possible; which, if once carried out, is not likely to require repetition; and when it is remembered that just at this season of the year the majority of sheep are in a condition requiring that they should in no way be harassed or driven about, the result of which would entail a heavy loss on their owners, it would, I think, be better that one or two dogs should suffer rather than cause practical disaster to a struggling farmer, especially in these bad times for agriculturists. The question of cruelty in the way of hare-hunting might with advantage have been omitted I think, as harriers are not in my experience more addicted—if so much—to running sheep as many other breeds of dogs.

As an instance of the absolute necessity of keeping sheep as quiet as possible at this time of the year I may instance the fact that at a partridge shoot at which I assisted a few days ago the host—not the owner of a flock of sheep on the beat—instructed the beaters to reverse the order of one of the best drives of the day, for fear that if the guns took up their accustomed position the firing might disturb the sheep. Sport of all kinds must necessarily have a certain amount of cruelty attached to it, but it can be materially reduced by a little thoughtful consideration; and far better for a hound or two to be severely dealt with than the lives of many valuable animals to be endangered.—S. J. F. NEWBERRY, Willesden, N.W.

South African Butterflies.—Since coming out here I have been much struck by observing a general correspondence between the African and the British butterflies. The first species I saw in the Transvaal was a "painted lady"; the markings were precisely the same as in the "painted lady" we know so well "at home." After twelve months' observation I think I may safely state that the "painted lady" is the commonest butterfly in South Africa; and here an interesting problem arises: was this species introduced south of the equator in a state of hibernation in ships coming from the north, or was it the other way about? Or have they spread abroad from some common stock? The only difference I have noticed is that the African "painted lady" is not quite so big as the British.

Another species, the "clouded yellow," is also very common in the Transvaal and exactly the same as *Colias edusa* of Europe, though the Transvaaler has a greater number of varieties. There is a common white butterfly which frequents gardens and which has often been pointed out to me as "the common cabbage white we get at home"; but it is far more like the British "bath white" than the "cabbage white."

The Brimstone is well represented by 2 or 3 species, but none of them quite the same as the British species. The tortoise-shell has a close relation in the Transvaal, but the difference is too great to admit of their having a common title. There is a butterfly the same size and shape as the English "peacock," which has a curious and interesting history. The summer brood is mainly scarlet with black and blue spots round the outer margin; this summer brood produces a winter brood of which the ground colour is navy blue with black and red markings; one would never take them for the same species, but the fact has been proved by entomologists out here.

South African politics and football teams seem to be attracting considerable attention at home now, so, as a member of the B.E.N.A., I thought that a brief note of Transvaal Natural History might be of interest to many

readers of your useful and enlightening paper.—(Rev.) CECIL F. TOMLINSON, Assist. Chaplain S.A. Church Railway Mission, Braamfontein.

Misdeeds of Old Foxes.—Is it only old foxes that rob hen-houses? Last spring several of our chickens were taken by a fox, which was supposed to be the same as an old one found dead shortly after. Just a few weeks ago another fox came and killed eleven chickens. Six were left lying dead; in or around the house, there were the remains of another it had partly eaten, and four had disappeared. In spite of precautions we took, afterwards the fox again managed to get into the house and killed nine more chickens, eating one, leaving six more near the house and burying two in an adjacent ash-heap. These last two it calmly ate on the grounds in the course of a few nights. A few days afterwards, a carter met an old fox on the road and killed it. It is thought to be the one that took our chickens. Old foxes may get too weak to catch rabbits, but this is perhaps unlikely as what they lose in strength they gain in cunning. They may like a change of food in their old age or more probably the younger foxes will not allow them to hunt in their hunting grounds. A large number of cubs were let loose here only a few weeks ago.—UNA D. DUNN, Blanchland Vicarage, Riding Mill-on-Tyne.

Tame Short-Eared Owl.—I enclose you a photo of "Granny" who, as you may see, is a short-horned owl—in a good temper, as shown by the ears lying flat. "Granny" is very amusing, and plays like a kitten with a small ball, chasing it across the floor. It also plays a game of football with my brother and makes an excellent goalkeeper, very rarely missing the ball, which it catches in its claws. It has a great dislike to strangers, male or female, and flies at them trying to scratch them; once, even after being knocked down, it returned to the attack, fluffing out its feathers, sticking up his horns and crying "hoo-hoo." It is especially fond of my brother, perching on his shoulder or knee; but, strange to say, should he go near it with his grey cap on, it becomes very angry and chases him also.* It does not like to be caged up, but knows well what "Go to your bed, Granny," means, and flies straight into the cage rather than be caught. Whenever it sees a mouse it becomes



Photo.]

[E. Ramsay.

"Granny."

She is very amusing and plays like a kitten.

very excited and if we hold a dead mouse up by the tail "Granny" will fly and take it neatly from between the fingers.—"AN ADMIRER OF THE COUNTRY-SIDE." [*This is very interesting as bearing upon my suggestion that some birds, such as robins and swallows, are irritated by some kinds of cloth caps.—Ed.]

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, DECEMBER 22, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

The Movement of Birds in North Britain.

By A. NICOL SIMPSON.

TO meet such a diminutive frame clothed in feathers as the golden-crested wren, when winter snows cover the ground, almost calls for one's compassion for such a weakling. Personally, I have seen the tiny creature seated under the ledge of an igneous boulder many hundreds of feet up the Grampian Hills; noted it drifting with the sleety showers in the straths; and in the morning papers find this little mite had been observed on the lantern of the Bell Rock Lighthouse, twelve miles from land.

A golden-crested wren placed in the palm of the hand could be almost blown yards away, and yet here we find the atom of flesh, bones, and feathers crossing the great Scottish hills, and striking boldly out over the North Sea. To look at the golden-crested wren, its frail outline does not appear to harbour sufficient muscular power to carry it over a hedge, and yet year after year vast numbers of these tiny birds make their way across these hills and straths, and seek a more congenial climate.

I have instanced the golden-crested wren by way of preface to my remarks on autumn and winter migration. The wren quoted, in my opinion, presents the most remarkable instance in ornithology of a desperate fight against great odds. To anyone who knows what a blizzard is amongst the glens and corries of Scotland's hills, it will be evident that where the shepherd is accustomed to find a stray "black-faced wedder" stiff and cold any morning, the life of such a creature as a golden-crested wren must assuredly hang upon a very frail thread while crossing the bare rocky peaks that peer like derelicts in a land of ice and snow.

In a lesser degree one might instance the flight of such a bird as the snowflake, any of the redpolls, fieldfare, redwing, or, indeed, the crows, hawks, and the larger species of loch birds that a Scottish winter forces southward. People of an observant turn of mind have no great difficulty in forming a very accurate conclusion as to the weather "up north," from the movements of the birds named.

In the lowlands the redbreasts leave the woods and bank sides and seek the gardens; the whinchat shifts day after day, and is constantly dancing about the dykes and hedges; the lapwings are restless, and in clubs sit out on the pastures; the skylarks, with an eery chirp, fly low, and seek the margin of river and sea. Before the week goes, the fieldfares are in the trees, chattering in concert; linnets settle about the farms; the snowflakes come, and the redwings hunt the fields with thrushes and starlings.

The morning dawns with a whiteness that covers the whole earth, and the mallards sit out upon the frozen surface of the loch. When the frost holds fast for some days, most of the

birds keep moving seawards, and it is by the ocean's flowing tide migration is seen at its best.

Up to the opening days of December there had been some snow and a little frost. Fieldfares had then arrived at the seaside in fairly large numbers, but redwings had yet to put in an appearance. The latter usually denote severe weather conditions beyond the Grampian range. During an average season a few of them will be noted towards the end of October. Of all migratory birds, redwings are the most liable to strike the telegraph wires, evidently doing so while *en voyage* after dark.

Along the seashore, the lapwings, starlings, and hooded crows hunt for provender diligently, while daylight lasts, and this in a measure supports them for their journey across the ocean. Dozens of these birds are annually killed by striking the towers from which the light flashes to warn the sailor of reefs ahead. These reefs, however, at low tide, prove resting places for the migrants, and in many cases supply the necessary food while *en route*.

In and around the creeks of such rocks, the ducks that travel with the changing seasons dine on the shell fish within reach, and not a few I have seen dissected exhibited signs of having made a hearty meal off "dulse" and other marine algæ, found adhering to the rocks.

Where these outlying rocks are bare at low tide, hundreds of gulls congregate. They seem to know the hour when the waters subside. Eider ducks, with that charming north country duck, the long-tailed species, may be noted any day in winter about either the Bass Rock or the Bell Rock lighthouse.

Then over the margin of the rocky land the long-tailed ducks dive under the surface for a second, reappear, and with evident gusto swallow some dainty morsel brought from the edge of the rock. During these diving operations the gulls hover overhead, and now and again make a dart at the little ducks, seemingly to secure what rightfully belongs to the diver. In this the gulls are often successful, even with larger ducks than the long-tailed species. Otherwise the gulls are simply scavengers about these outlying reefs. They will devour almost anything, from a crab's broken limb to a greasy cord, adrift from some passing yawl.

A list of the birds that rest at such places could scarcely be given, because many turn up there which are not considered by naturalists as true migrants. Sparrows, jackdaws, rooks, and quite a number of finches are noted every winter by lighthouse keepers. Of the more regular travellers that rest about isolated rocks off the coast may be mentioned the following:—Puffins, razorbills, cormorants, various species of gulls, auks, shags, great northern divers, goosanders, pin-tailed and golden-eyed and other ducks, scooters, terns, etc.

Gannets seldom rest on such places, but seem to rely more on their powers over the ocean to provide them with rest and food. Of land birds that do accommodate themselves about these sites the name is legion, although as a rule they do not remain longer than a few hours if the weather be at all favourable for their journey. Larks, tits, finches, warblers, fly-catchers, blackbirds, thrushes, owls, woodcock, starlings, pigeons, buntings, land and water rails, plovers, oyster catchers, rooks, crows, sandpipers, cuckoos, hawks, and many more.

In short, hardly a species at some time or other but is represented upon one of these water-washed reefs. And while these resting places prove a boon to many of the feathered tribe, still it has to be granted that so far as the land birds are concerned, very often a halt in mid-ocean is but the forerunner of disaster. Only during the daytime can these reefs be taken advantage of, and only, too, when the tide is low.

Hungry and tired, the frail wings stay their movement, and after a little rest the birds move about in quest of food. As will be readily guessed, land birds, especially the smaller kinds, can find little to satisfy their wants where only great tongues of tangle sway, and anything they are likely to pick up very often sickens them, and with ruffled feathers they mope about until the inflowing tide throws its spray about their feet. Then they move away a short distance to nurse their sickness in silence. Too feeble in body to outspread their pinions and renew their journey they change from site to site, until a stream of water washes them into the ocean dead.

Thus thousands of land birds perish while on their migration every year. The sea fowl and the birds of the river sides that meet there, are, however, more fortunate.

Yet with all the knowledge gleaned during the past century, the reason annexed to the flight of the little golden-crested wren and its fellow travellers is still a problem in the year 1906.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

Special Advantage for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches; 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Branches.—The local hon. secretaries, whose names and addresses are given below, will be glad to hear from persons in their respective neighbourhoods, who are desirous of joining the B.E.N.A.:

Warwickshire: Under the Erdington and District Branch, in addition to the places previously mentioned, Streatley, Hill, Boldmere, Witton, Coleshill, Castle Bromwich and Aldridge are included, and Mr. W. F. Wiemann, 22, Orchard Road, Erdington, is the hon. secretary.

Yorkshire: For the Castleford and Pontefract District, the hon. secretary is Miss Hilda Jackson, Wesley Villas, Castleford.

Lincolnshire: For the towns and villages round Holbeach, including Spalding and Sutton Bridge, Mr. L. M. Curtis, Brant House, Holbeach, is the hon. secretary.

Schools' Mutual Aid.—Under the tactful and energetic management of the Hon. Cordelia Leigh this scheme is rapidly taking shape. Two good London schools and two good country schools have been selected for its experimental working: Stoneleigh School in Warwickshire being linked with Gloucester Road School, Peckham; and Middleton Stoney School in Oxfordshire with St. George's School, Camberwell. The first parcel of natural history objects was to start on December 11th from Stoneleigh in Warwickshire; and the opening of the parcel when it arrived in Peckham must have been an interesting ceremony.

The difficulty in the scheme has, of course, been to devise some suitable return which the town schools could make for the regular parcels of natural history specimens: and Mr. Johnson, the headmaster of Middleton Stoney School, has made the excellent suggestion that, in addition to the cuttings from illustrated papers, his boys would be extremely interested in receiving letters from some of the boys of Camberwell, describing their lives and surroundings and London generally. In all country schools such letters would be welcome and instructive; and I have no doubt that the suggestion will work well in practice.

Another good suggestion made by the country schoolmasters is that the corresponding schools should be changed at the end of six months; and to this I would add that the plan of rotation should be so arranged (1) that every inland school, whether in town or country, should have its turn of exchange with a seaside school, so as to have an opportunity of becoming familiar with the wonders of the sea shore; (2) that English schools should, where possible, be linked successively with Scotch, Irish and Welsh schools; and (3) that so soon as arrangements can be made, Canadian, Anglo-Indian, South African, Australian, etc., schools should be brought into the scheme.

Now, will all school-masters or managers in any part of the Empire, who desire to take part in the scheme, or any readers who are able and willing to help it in any way communicate with us?

Mutual Help.—Mr. H. L. Woolcombe, Elmfield, Northlaw, N. Devon, would be glad to hear from any member willing to lecture to a working men's club in that village, seven miles from Okehampton.

Junior Club Wanted in the Cricklewood District, London, N.W. (L. F. Taylor, 21, Richborough Road, Cricklewood, N.W.).

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an association in which no fees are charged for membership. Amount previously acknowledged: £13 12s. 1d.; since received: 1s., W. Lord; 1s. 4d., Fred. C. Casperd.

Altered Date of Meeting.—The next meeting of Glasgow members will be in St. Mungo Hall on Friday, December 21st not December 28th.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (similar to that on the back page), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantages of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Diseased Goldfish.—The latest remedy recommended is flowers of sulphur sprinkled in the water.—(To C. J. GORDON, Edinburgh).

"Ash Trees from Cherry Stones."—It was absurd, of course, for Blundell to suppose that the ashes grew from the cherry stones he planted, and equally absurd to account for the miracle by supposing that the original cherry tree had been grafted on an ash stock.—(to S. H. LLOYD, Seaforth.)

Leaves of Blackberry.—No, I have never known a blackberry leaf to have five separate leaflets, like the raspberry. The lower four leaflets always come together from the same point. In its growth the blackberry illustrates well the evolution of a simple leaf to a pinnate form.—(to J. HARTLEY, Nelson, Lancs.)

To Preserve Opening Leaf-buds.—The best way to preserve opening leaf-buds, etc., so as to show the arrangement of the leaves in the bud, would probably be by the method of covering them with hot dry sand. This would preserve their shapes.—(to N. CULLIS, Streatham Hill.)

House Flies.—What you regard as two kinds of house flies are probably only the two sexes of the common house fly, *Musca domestica*. The other species of the same genus, *Musca corvina*, is not common in houses. Both kinds lay their eggs in anything filthy or putrid, and the maggots feed on it.—(to E. BOREHAM.)

Snapshots of Wild Life.—A focal plane shutter is best, as it passes more light when working at a high speed than shutters of other kinds. It is wise, however, when working at first with one of these to make a series of trial exposures on a plate of the brand used so that the absolutely correct exposure may be determined. Using a speed of 200th of a second, for example, with F8, three or four exposures should be given by opening the slide about an inch at a time. A quarter

plate will thus give space for about four exposures, and a little calculation will soon decide which of these is best, and the shutter driving spring is tightened or slackened accordingly.—(to A.B.C.)

Clever Sparrows.—Yes, one or two sparrows will always learn to imitate the tits in clinging to hanging food.—(to P. WRIGHT.)

Bramblings' Food.—The nuts of the beech tree, commonly called beech mast, are the bramble finch's favourite food in winter.—(to G. E. PICKERING.)

Much Eaten Raspberry Leaves.—I do not think that this is the work of caterpillars. It looks more like that of a beetle, the small garden chafer, *Phyllopertha horticola*. The



Photo.]

[F. BOLLAND.]

The Work of Beetles.

print, by the way, excellently illustrates the utility of "photography without a camera."—(to F. BOLLAND.)

Unanswered Questions.—Correspondents whose queries remain unanswered will find the reason in the "special announcement" above.

"Nature Notes," the sympathetic little magazine of the Selborne Society, certainly shows no falling off in interest during the absence abroad of its editor, Professor Boulger, whose place is ably occupied by Mr. Wilfred Mark Webb, F.L.S. The December number completes Vol. XVII.

Nature's Carol Singers, by Richard Kearton, F.Z.S., published by Cassell & Company at 6s., maintains the high-water mark of excellence which Mr. Kearton's previous works have reached; and it is doubtful whether higher praise than that can be given. To welcome a new book by this great artist-naturalist has become almost a pleasant Christmas rite each year; and that the supply may not fall short for many years must be the heartfelt wish of many thousands of young readers. "Nature's Carol Singers" has the greater value in that it goes beyond the familiar song-birds, and gives interesting accounts of such birds as the twite, the dipper, and the rock pipit, and rarities like the marsh and Dartford warblers. To have seen a Dartford warbler nowadays is something: to have taken its photograph at close quarters is a feat of which even Mr. Kearton may be proud.

The Week's Wild Life in Pictures.

(See page 91.)

ADVERSITY always drives birds to flock together; and moorhens (1), which at other times are most often seen singly, congregate in conspicuous companies on the ice when they can find no open water anywhere, nor any convenient copses or hedges in which they can lurk. At a distance and against the light background of the ice, the moorhens look all black, and you cannot see either the red shields on their foreheads or the white stripes on their flanks. The coots, which similarly assemble on the ice, have white forehead-shields and are blackish-slate in colour. You can distinguish them from the moorhens at a distance, because their bodies are rounded behind, as if they had no tails.

2. The green cup-moss is not a moss, but a kind of lichen, which is common on moorlands, in woods, and hedgerows. It varies a good deal in appearance, according to the situation wherein it grows. It has been used as a remedy for whooping cough. Gerarde says, "The powder of this lichen given to children in any liquor for certain daies together is a most certaine remedy against that perilous malady called the chin-cough." The form of the plant is as though a number of long-stalked cups had been stuck into the ground, and the colour is of a pale, dirty green. It is at its best, say, in December or January.

3. This little owl, which is not much larger than a thrush, is constantly being reported as shot or "secured" at this season, because it is more easily seen now, and so many men who carry guns are ignorant of the fact that the little owls in Britain have been introduced by public-spirited naturalists for the purpose of "improving the country." The little owl is a charming bird, which feeds chiefly upon insects; and it is absurd that scientific philanthropists should spend money in acclimatizing it, only to fill the glass cases of ill-informed collectors.

4 & 6. Very common objects of the country now are empty snail shells; and the most attractive in colouring and marking are the two kinds of *Helix*, known respectively as the common or dark-lipped hedge-snail (*nemoralis*), the round or pale-lipped hedge-snail (*hortensis*). Very like them is the tawny or wood snail (*arbutorum*); but this is almost always reddish brown with a single stripe; whereas the other two have over ninety recognised varieties according to the numbers and arrangement of their stripes upon a yellowish or pinkish ground. The figures represent one handsome variety of the common hedge-snail, with its dark lip and rather conical shape.

5. The chub is more slender than the roach, but not so slender and graceful as the dace. It is the same colour as the roach; but there is almost always a red flush on its cheeks, and the scales have greyish margins. The chub loves to lie in deep holes of clear water, and will take almost any kind of bait; but it is a very shy and quick-sighted fish, and the angler must stalk it carefully. If you remember that the dace has no red on the fins, and the roach no red on the cheeks, you will be able to distinguish the chub.

7 & 8. These two figures of the bee and the early spider orchis show what a wide field of interesting study there is in the winter aspects of plants. Visiting a new part of the country, what seems mere green turf to others becomes filled to the expert eye with interesting flowering plants that are to be; and where the seedlings of some rare kind chance to be thickly clustered, the winter is the time when you may bring living specimens away without injuring the local prospects of the species, but rather improving them, as when a gardener thins out a crop that springs too thickly.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

GREAT GREY SHRIKE shot November 27th at Holbeach, Lincs.—(L. M. Curtis.)

LITTLE OWL (*Athene noctua*) shot at Holbeach, Lincs., November 28th.—(L. M. Curtis.) [The stomach was found to contain remains of mice and numerous beetles. As to the shooting of little owls, see Week's Wild Life on this page.—Ed.]

PACIFIC OR GREAT BLUE HERON.—The scientific name of this bird recently figured and recorded as shot in Britain is *Ardea herodias*.—(to W. Wenham.)

RAVEN.—A pair flying westward near Petersfield, Hants, on November 19th.—(G. A. W.)

Birds on Migration.

SWALLOWS at St. Margaret's Bay, Dover, on November 27th, wind N.W. (E. B. B.); at Falmouth, Cornwall, on or about November 28th (W. L. Fox.) **HOUSE-MARTINS** at Liverpool, on November 16th, wind N.W. (R. E. Askew); on November 26th at Helston, Cornwall (J. J. Ross collar); at Falmouth, Cornwall, on December 5th (W. L. Fox.) **NIGHTINGALE** reported seen at Bodicote, near Banbury, Oxfordshire, by four persons, on the 25th and 27th of November and on the 1st of December.—(E. Tyrrell.) **DAWCHICK** picked up alive on December 5th at Potton, Beds.—(J. H. Symonds.)

Marked Birds.

ROOK, with white feathers in left wing, at Littlehampton, Sussex, on November 30th (M. E. de B. Rix); another with white feathers in its right wing on November 28th near Northampton (G. H. Lewin.) **ROBIN**, with white breast, has been seen for a considerable time at Llansaintffraid, Mont., Wales.—(T. G. Jones.)

Butterflies and Moths.

SMALL TORTOISESHELL at Finchley, N., December 1st.—(F. Surgey.) **RED ADMIRAL** at Manor Park, Essex, on November 28th.—(R. D. N.) **OAK EGGAR** caterpillar still abroad feeding at Holbeach, Lincs., December 7th.—(L. M. Curtis.) **PUSS MOTH**: Cocoon found on poplar root four inches underground at Holbeach, Lincs.—(L. M. Curtis.)

Other Insects.

LADYBIRD, at Pulborough, Sussex, on December 3rd.—(B.E.N.A. 1779.) **WASPS**: Nest in full activity on December 2nd at Havant, Hants (F. Bone); flying on December 7th, at Gosport, Hants (J. Gorsuch); December 3rd at Banbury, Oxen (E. Tyrrell.) **GLOW-WORMS**, "last seen" at Hever, Kent, on November 16th.—(W. V. Shurley.)

Plants.

RARE PLANTS IN SCOTLAND.—There seems no doubt of the accuracy of the record that the rare plants, Hoary Cress and Sickle Medick (*L. draba* and *M. falcata*) are abundant at Kilmarnock, in Scotland. Perhaps Mr. Birrell, who records them, would secure some seed next year for B.E.N.A. collectors who would like to grow specimens.

TUFTED CENTAURY (*E. capitata*) has records in several places in Cornwall.—(W. Hammond.)

LATE WILD FLOWERS.—Gathered near Huntingdon, December 2nd:—Primroses in plenty, wood violets, common hawkweed, bristly ox-tongue, common ragwort, lesser spearwort, scarlet pimpernel, perfoliate yellowwort, bugle, several kinds of thistles, common sowthistle, bulbous buttercup, white and purple deadnettle, groundsel, daisies, etc.—(Miss M. Cuffing.) In addition to many of the above, harebell, knautia, lesser scabious, dove's foot geraniums, black knapweed, calamint, water ragwort, blackberry, dewberry, black ballota, furze, cat's ear, white lychnis, red campion, and night-flowering silene, near Wells, Norfolk, Dec. 3rd.—(E. K. R.) Some of the above with lesser crane's bill and poppies at South Queensferry, Scotland, December 5th (A. Morison); some, also, with tormentil, strawberry leaved potentil, wild strawberry, mouse ear hawkweed, smooth crepis, fever few, and centaury at Posingworth, Sussex, December 3rd.—(J. Sharp.)

LATE GARDEN FLOWERS.—Gathered December 7th at Worthing: Canterbury bells, coreopsis grandiflora, antirrhinums, marguerites, pentstemons, aubretia, Virginian stock, blue larkspur, marigold, roses, all in very fair condition.—(Saml. Tyler.) Crimson verbena and canariensis in flower at Pulborough, Sussex, December 1st.—(B.E.N.A. 1779.) Strawberry, November 28th, sweet pea, December 5th, at Southport, Lancs.—(Miss B. Southworth.) Apple, December 5th, South Queensferry, Scotland.—(A. Morison.)

Appreciation.—At a recent meeting of the Northampton Natural History Society several complimentary references were made by the lecturer to THE COUNTRY-SIDE.

Photographic Christmas Cards.—Among the greeting cards of the season Houghton's, Ltd., 88 and 89, High Holborn, have produced an excellent variety of folding cards designed to take photographs of different sizes. Amateur photographers should find these cards an admirable means of distributing their works of art to friends.

Protection of Kingfishers.—The *St. Neots Advertiser*, Hunts., notices that kingfishers have recently become more numerous there; and, reminding its readers that to shoot kingfishers is illegal, it expresses the hope that "any infringement of the law in this respect will be brought to the notice of the police."

Not Swindled This Time.—Mr. Roy G. Glenday writes from Holy Trinity, Bury, Lancs.: "A friend of mine, who is a great lover of nature and animals, was very doubtful about the stereoscopes, as he had often been swindled by similar adverts. in other papers. However, he said he would get one as he did not think you would allow the paper to become simply a means of making money. He says he is more than satisfied."

A Nature Lecture

THAT CAN BE GIVEN ANYWHERE BY ANYONE.

The Lecture upon "British Wild Life," prepared by Mr. E. KAY ROBINSON, Editor of THE COUNTRY-SIDE, is of a very interesting character. It is issued as a pamphlet, price 6d. (by post 7d.), and can be read at any gathering of old or young, by anybody, whether he or she be a lecturer or not. This lecture goes with the "British Wild Life" Lantern Slides, but it is not confined to them and forms a splendid Lecture by itself. We commend it to all Secretaries of Natural History Societies, Masters of Schools, etc.

Write to LECTURE DEPARTMENT,

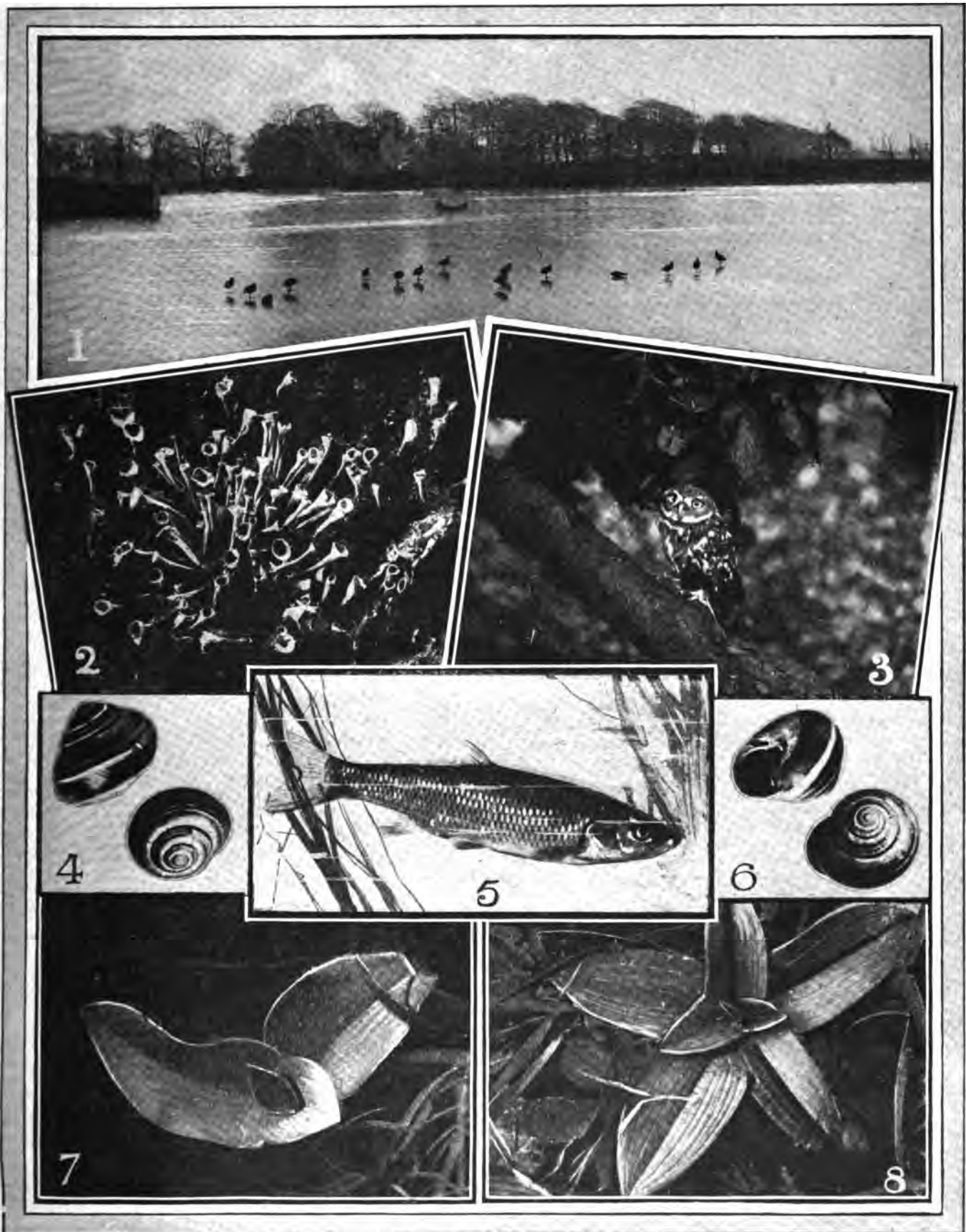
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"DAILY MAIL"
The Naturalist's Daily Newspaper.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 90.)



1. Moorhens, *Gallinula chloropus*, on Ice (W. Reid). 2. Green Cup-Moss, *Cladonia pyxidata*, Natural Size (G. Parkin). 3. Little Owl, *Carine noctua* (F. J. Smith). 4 and 6. Common or Black-Tipped Hedge-Snail, *Helix nemoralis*, Natural Size (G. Parkin). 5. Chub, *Leuciscus cephalus* (S. and W. Johnson). 7. Bee Orchis, *Ophrys apifera*, and 8. Early Spider Orchis, *O. Aranifera*, in their Winter State, Natural Size (G. Hodgson).

Profitable Poultry Culture.

The Minorca.

By "Chanticleer."

Characteristic Points.

CONTINUING our notes upon the Black Minorca, which was illustrated last week, we will now set forth the points of exhibition birds.

The cock bird possesses a characteristic head adornment—a well set comb, large as possible, perfectly erect, wide at the base and extending well to the back of the skull, having six to seven well serrated spikes of pronounced appearance.

It must be free from any twist and arch well down the hackle feathers. The texture is rough and it must have no side sprigs. Here let me state that the comb of the Minorca cockerel or pullet can be much increased by daily feeding on nutritious foods such as Spratt's patent poultry meal and a goodly addition of that firm's preparation of cooked meat known as "Crissell," both as largely used by successful exhibitors.

Next the lobes attract our attention. They must be large and long, in fact almond-shaped and beautifully smooth, also perfectly white and free from blemish. Wings must be full, tail and hackle feathers full and flowing. Good black coloured legs enhance the male bird's appearance, but with age they assume a dark slate blue and gradually get lighter. As to size, the cock will weigh 7 lb. to 9 lb.

A typical hen must be of squarish build, with a straight, long back. For good layers and well-bred birds selection should be made from hens having a deep keel and low stern.

The comb is handsome and, whilst being equally serrated to the male bird, is gracefully drooped, almost covering one side of the bird's face; in fact, utility poultry-keepers rely on a large comb as a certain sign of fruitfulness.

The ear lobes are of medium size, fitting close to the head and perfectly smooth. The hen's carriage is upright and graceful, the weight being about 6 lb. to 7 lb.

How to Mate.

Mating up a pen of Minorcas to breed good stock is no easy matter, especially if the ethics of breeding are disregarded. First, I would warn would-be breeders to be careful not to have mixed blood or birds from several strains; it is better far that a few birds of the same strain should be mated.

Haphazard mating means failure. It is not necessary to pay high prices for stock, still if one's means permitted a pen of three really good birds is far better than half a dozen mediocre specimens. My advice is to mate up a cockerel with hens or *vice versa*, so as to have age on one side and, whilst chickens may be hatched in January or February, the best month to hatch Minorcas for laying or exhibition is March, and—as with all small breeds of poultry—to continue until the end of May, but not later.

I must impress upon my readers the important fact that breeders always look to the cock for colour, head points, such as comb, lobes, wattles, eye, etc.—whilst the hen gives size, in fact it does not so much matter if the male is small if good in the other points, but all hens in the breeding pen should be large as possible and have good shape and style.

Straight breast bones are an essential to success. All birds which display white, in fact white flight (or wing feathers) or feathered legs, should be avoided. In conclusion I would mention that Minorca chickens, like most black-plumaged fowls, when first hatched—and until the young birds shed their chicken feathers—display a goodly number of white feathers, which sometimes give rise to much apprehension; yet it is an open secret that most of the very best plumaged Minorcas

often sport white feathers in chicken-hood, whilst those black when hatched turn to a rusty brown.

Qualifications required in a Poultry Keeper.

By the Rev. J. A. Haigh.

THERE are certain individuals who would never become successful poultry-keepers, given even every advantage in order that they might, if possible, gain the necessary knowledge and experience in regard to the care and management of fowls.

Not a few people imagine that it is quite an easy business, and that anyone can feed and manage poultry. No greater mistake could be made.

No one ever yet-made a name in the poultry world who was not a dependable person, and possessed of industrious habits. The requirements, indeed, that go to make a successful poultry-man are so exacting that such as are really efficient in the work are few and far between. And it can be set down as certain and sure that one who has made a success in the industry is no fool, for to numberless temptations he has often had to say no.

It needs a certain amount of strength of character to become an expert poultry-keeper.

Determination, energy, industry, regularity, activity, a keen interest in the work, early rising, and seven days' work in the week—these are some of the demands made, and should they be lacking the result of failure follows with unerring certainty.

We often hear the advice given—"if you want anything doing well, do it yourself." All who contemplate poultry-keeping should take note of this, and also act upon it, or else expect to fail.

However few the number of birds kept, unless the owner can himself give them regular and careful attention, he should let poultry-keeping severely alone.

The need of vital interest is obvious to any thinking person; without it there would be neglect in regard to many things of importance, and gradually this neglect would grow worse, and impatience would be fostered as well.

The need of physical energy is often lost sight of, yet it cannot be dispensed with; for the work has to go on, be the weather fine and warm or stormy and severe.

To turn out early in the cold winter mornings is a task beyond the strength of some people, who would be able to do it but for weak health. A delicate person is, therefore, hand-capped, and unless reliable assistance—and that under his own supervision—is available, he will find this disadvantage to tell against success.

Help, though, may be possibly secured, but there must be some means of knowing that the work is properly done.

In every case where help is resorted to, it should be supplemented with personal supervision.

The need of industry will soon be discerned when once a person has embarked on the pursuit of poultry-keeping; and if it is lacking, or is not sustained, the probable result will be a speedy retirement from the fancy.

The same result will be likely to occur if things are done by fits and starts. Regularity is a point of the highest importance. To-morrow finds no place in carrying out the many necessary details in this business.

Attention to small details, and that regularly, sums up the matter of successful poultry-keeping in a few words.

The above points should be considered by every beginner who would succeed, and should he feel that the demands made are too great, he had better not engage in the undertaking of poultry-keeping at all.

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SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

The Garden.

The Lupin.

A Fine Decorative Plant.

OF all hardy plants, the perennial Lupin (*Lupinus polyphyllus*) is certainly one of the handsomest.

It is not particular as to situation, and succeeds well in any ordinary garden soil; it therefore deserves much more recognition by gardeners than it usually receives.

It is a fine subject for naturalising, and its decorative effect in the garden can hardly be overestimated, if it is planted in masses, as shown in the photograph.

Its stately flower spikes grow from three to five feet high, and in colour range from blue and purple to white, or even white and blue on the same plant. Its flowering time is from May to July, but if the plants are cut down as soon as the flowers are over they will probably send up more spikes again in the autumn.

The lupin is easily raised from seed, which should be sown in May or June, and the seedlings kept well thinned, so that the plants may be a good size for placing in their permanent quarters in the autumn.

Work for the Week.

Early Crops of Potatoes.

WHERE a frame can be spared for the purpose, it is worth while to plant it with potatoes for a very early crop. Any early sort, such as Ashleaf Kidney or Sharp's Victor will answer. The frame should be prepared by placing inside it a layer at least a foot deep of good light soil, old potting soil mixed with spent dung from a cucumber frame answering very well.

In this the potatoes should be planted a foot apart each way, and then all that is needed is to keep the frame close till the shoots appear above the soil, when air should be given on favourable days, and, of course, all the light possible.

The frame should face south, and if against a wall or front of a building so much the better.

If the shoots come too thickly they should be thinned, and even stopped, so as to keep them within bounds. Healthy tops mean a crop of sound potatoes, and there is no difficulty in growing the potato in a frame in winter if its simple requirements are provided. Started in December, there should be a crop in April.

Fruit Trees on Walls.

The condition of fruit trees on walls should now be looked into. Trees grown under such mutilating treatment as properly managed peaches, apricots, plums, pears, and cherries, when trained against walls, require a great deal of care and attention or they soon go wrong.

The regulation of the growth, suppression of superfluous or over-vigorous shoots, the cutting out of old worn-out branches to make room for younger and more capable ones, the removal or destruction of insects by scraping or dressing with insecticide, and the respacing or rearranging of the branches so that in summer they may enjoy light and air—these



[Photo.]

[Mrs. Turnbull.]

A good show of Lupins.

These are among the handsomest of our hardy plants and succeed well in any ordinary garden soil.

are all operations that will have to be performed in winter wherever good fruit from wall trees is to be annually obtained.

In nailing shoots to the wall some care is necessary or the shred-holder may be bound too tightly or the nail fixed where it will bruise the shoot. Old worn out trees should be rooted out and replaced with healthy young ones.

Forcing Preparations.

The house, pit, or frame on a manure hot-bed in which forcing and propagating are to be done should now be got ready. A great deal can be done, not only in the way of keeping up a supply of flowers for use in the house, but also in maintaining a show in the conservatory and in supplying early choice vegetables by adapting a house or other suitable structure to forcing purposes.

It should be a house where there is plenty of light and a good supply of artificial heat, and there should be no difficulty in maintaining a constantly moist atmosphere. Such a structure is capable of an immense amount of good work.

Shrubs, bulbs, roots, may be turned out in flower quickly in batches, and a supply of rhubarb, seakale, chicory, mustard and cress, turnip tops, etc., kept up to the delight of the family at table.

A little thought and intelligence and the thing is done. Too often one sees exactly the right kind of structure for the work here referred to doing nothing all winter except shelter a few half-dead plants, which by the spring will not be worth the fuel it has cost to keep them alive.

Red-berried Mistletoe.

THERE is a plant of this, the red or Spanish mistletoe, in one of the greenhouses at Kew. It is established on a young olive tree, mistletoe and olive growing together so far in perfect harmony. There is no difference between the red and the white mistletoes except in the colour of the berries and the size of the male flowers. Whilst our own mistletoe grows on many kinds of tree, the Spanish red form is rarely found on any except olive trees.

It attracted the attention of the botanist Belonius 350 years ago, but it does not appear to have ever been seen alive in England until the late Hon. Charles Ellis, of Haslemere, introduced it a few years ago from Morocco, or, rather, obtained the red berries and young olives which he inoculated with the seeds and carefully tended for nearly two years, syringing the olives daily until the mistletoe had caught hold.

The Kew example was presented by Mr. Ellis. It may not be generally known that the mistletoe can easily be established on such trees as hawthorn, apple, pear, or poplar by making a slit in the bark and forcing the mistletoe seeds into it, covering them at once with a thin plaster of clay.

In many places the mistletoe spreads so rapidly as to become a nuisance. Yet it is an ill wind that blows no good, and we are informed that the profits in Herefordshire and other counties from mistletoe at Christmas time is considerably greater than from the apple trees on which it is parasitical.

SPRATT'S Doggie Calendar.

1907.

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THE GARDEN.

(Continued from page 93.)

Garden Queries Answered.

Rhododendrons.

The rhododendrons you name can be obtained probably from Messrs. J. Veitch and Sons, Chelsea, or Messrs. G. Paul and Sons, Cheshunt. The following sorts can be recommended for the position you name: Doncaster, scarlet; Lady C. Mitford, peach-coloured; Amphion, rose-pink; John Walter, crimson; The Queen, blush white; Mr. John Clutton, white. Messrs. Paul and Son offer collections of seedling rhododendrons raised by them from *R. Fortunii* and some of the best garden sorts. These seedlings are therefore of the same quality as those you name, which also were bred from *R. Fortunii*. We can recommend these seedlings for their pleasing rose, red, and pink colours and their free flowering character. They ought to be a great success in the neighbourhood of Tunbridge Wells.—(to W. HITCHCOCK, Tunbridge Wells.)

Chrysanthemum Sports.

Many of the garden varieties of chrysanthemum have been obtained from what are known as bud sports; that is, from a shoot bearing a different sort of flower from those on the rest of the plant. It is not easy to account for this freak, but it occurs more or less in all kinds of cultivated plants. The sport is fixed by propagating it by means of cuttings. There is a very interesting chapter on bud variation or sports in Darwin's "Animals and Plants under Domestication."—(to A. W. BUNKALL, King's Lynn.)

Some Indispensable Plants for Small Gardens.

By F. M. Wells.

IN every garden there needs to be a certain proportion of hardy plants that can be relied upon to add bountifully and generously to the colour scheme, plants that can really be relied upon to make, as it were, a backbone of colour over a considerable period. Other things, of more beauty, perhaps, like irises and lilies, have their beautiful brief flowering season and are gone, and the position they occupy is colourless for the rest of the year.

But there are hardy plants that remain in blossom for weeks, and sometimes months, and therefore we ought to have a generous supply of some one or another of these long-lasting bloomers for each season of the year.

For early spring is *Doronicum austriacum*, a plant I need not describe further, as so lately I drew attention to its excellent qualities. I mention it now because it must certainly come under this category of indispensable plants.

To flower well-nigh the summer through *Linum perenne* must rank high in any list of plants. The blue variety is, I think, infinitely to be preferred to the white. It is extremely light and delicate in habit, while the flowers are of a bright pale blue, borne with great profusion. It stands drought well, and should have an open, sunny position.

It reaches something like two feet in

height, and if used for border work, it is more effective if planted in groups of three or five than as isolated specimens; and so daintily delicate is the growth that only the dwarfest of plants should be established in front of it. Half its charm is to get an unbroken view of the slender plant from soil to blossom.

There is nothing, perhaps, more charming for association with it than the viola. This also is one of the long-flowering, indispensable plants. Nowadays brilliant self-colours are to be obtained. By propagating at different seasons and in different manner, *i.e.*, by seed sowing, division, and cuttings, blossom, practically, can be obtained well nigh the year through. Thus, when the flowering season of plants divided in the autumn is over, their place can be taken by spring sown seedlings, and this means blossom from spring to late autumn.

Pyrethrums are invaluable for producing a splendid mass of colour throughout the early summer. It is well worth while to get the best strains possible. Bright rose colour is at all times one of the most decorative of colours, and, I would like to say, that for the best effect, only a few shades of colour should be indulged in; thus, such a variety as James Kelway, a brilliant rosy crimson, might well take the lead, with strong support from bright rose pink varieties, reaching a high light in a small proportion of white. I have emphasised the importance of a good strain because there is a considerable difference in the size and substance of the petals, and in their length.

The double flowers are, of course, still more lasting than the single. But even the single varieties possess the somewhat rare quality of retaining their colour after the first freshness of the bloom is past. Many named varieties are to be had, but a packet of good seed should result in plants every whit as good.

Age makes a considerable improvement in the number and quality of the blossom. Thus, year old plants give an effect pretty enough, but for splendid massive effect not to be compared to plants that have an additional year's growth upon them. It is important to remember that so long as the soil is deep and good, pyrethrums will flourish quite well in decidedly sunless aspects, even under the semi-shade of large trees. I have so many more plants to include under this heading that I must continue the subject at another time.

Our Photo. Competition.

Photographs intended for the December competition should have their titles and names and addresses of the senders written clearly on the back, and should be addressed "Camera Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

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The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 85. Vol. 4

DECEMBER 29, 1906.

1d. WEEKLY.

Strange Captures.

THESE three pictures illustrate in different ways the curious uncertainty which attends the action of traps and the remarkable results which sometimes follow when the action has been deferred.

and nevertheless caught three mice at one "little nip."

What had happened, of course, in this case was that the trap had been too strongly set: so that first one and then another mouse were able to help themselves to the bait. Before they had finished, however, mouse No. 3 joined the little family party; and the trap, like an omnibus which is "full inside," suddenly started off, with the result depicted.

Illustration No. 3 teaches the same lesson, namely, that if you are setting traps for vermin you cannot set them too lightly. They may, when heavily set, effect one of these curious captures now and then; but almost invariably the result next morning will be an empty trap and the bait gone. In this particular case the trap was set for a supposed "rat" which had carried off a number of ducklings. It was baited with a dead duckling and placed in such a position that to get at the bait the marauder had to pass over the trap. Next morning a young hedgehog was



Photo.]

A Remarkable Tragedy.

[J. H. Newstead.

A weasel that had just caught a field-mouse was seized by the trap at the moment of victory.

The first shows a trap which was set in a stable at Chester to catch rats. Instead of that, when inspected one morning, it was found to have caught a weasel and a field-mouse simultaneously. The weasel was nearly cut in two by the powerful jaws of the trap; but it still gripped the field-mouse by the side of the head, and one of the mouse's hind-legs and its tail were also nipped in the trap.

What had happened was, apparently, that the weasel on his rounds visited the stable in search of mice: for the weasel is a fearless and persistent hunter round human dwellings in the country. Here he discovered a field-mouse eating the bait in the trap, as it was able to do through not being heavy enough to set it off. When, however, the weasel suddenly sprang upon the mouse, matters were altered. The trap promptly sprung, and both mouse and mouse-killer were killed at the very moment of crisis.

The second illustration represents an even more curious incident: for the trap, of the kind known as "Little Nipper," measured only $1\frac{1}{2}$ inches wide by three inches long,



Photo.]

"A Good Catch." Three Mice in one Trap. [A. S. Anderson.

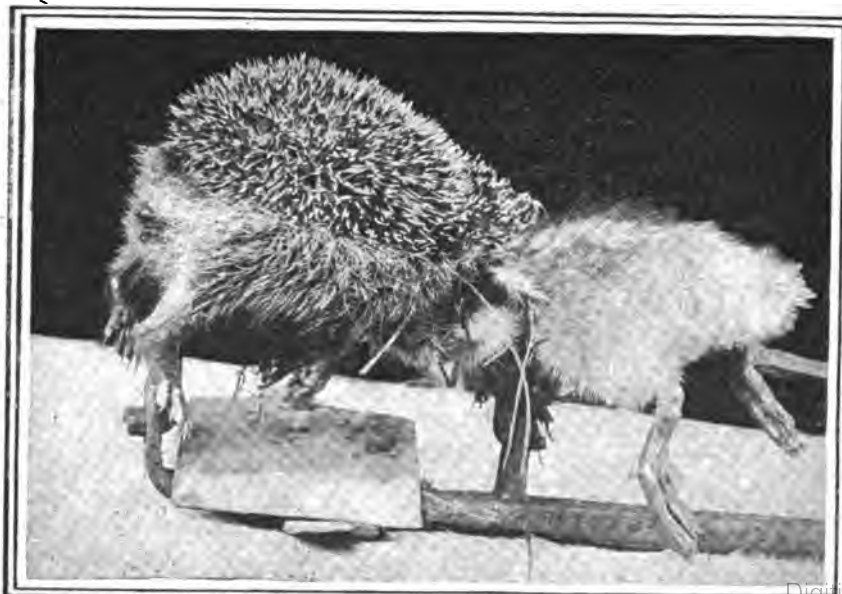


Photo.]

A Double Capture.

[C. Morgan.

The hedgehog had caught a young duckling, and, dragging it across the open trap, both were seized.

discovered in the trap, caught by the nose, but still gripping the duckling. In this case what had happened was that the hedgehog's single weight did not suffice to set off the trap, but when it attempted to back out carrying the duckling, it was heavier — and the picture shows the rest. A case like this would not, of course, afford decisive evidence that the hedgehog was the culprit who had taken all the previous ducklings, because many creatures which do not kill living prey will help themselves to dead bait.

Country-Side Notes.

Warham, Norfolk.

"He who feels contempt
For any living thing, hath faculties
That he hath never used, and thought with
him
Is in its infancy."
—WORDSWORTH.

ALTHOUGH this number of THE COUNTRY-SIDE is dated December 29th it will be in the hands of all our readers soon enough for me to be in time to wish them all a Merry Christmas. This I do with all my heart. And even our thousands of good friends in the cities will admit that hearty Christmas greetings savour more of THE COUNTRY-SIDE than of the streets. The ideal Christmas has its wide waste of clean snow across which many converging tracks lead to the village church where after much stamping of feet and the murmur of greetings in the porch, a red-cheeked congregation troops in, gazing with interest and admiration at the pulpit and the pillars which deft fingers of the ladies of the village have draped with holly and ivy. The cheery service follows with a lusty chorus to each hymn; and, after unrestrained clamour of "Merry Christmas" greetings, the congregation diverges again into dark streaks across the snowclad landscape to its several homes, where the great meal of the year is eaten with merriment; and the all-too-short afternoon that follows is spent in annual sport. There is no one hungry or cold or friendless in the village on Christmas Day. Kind hearts have been busy for many days searching out the sad spots in the little groups of cottages and arranging pleasant things for the unhappy on this one day of goodwill to all. And it is with a great regret that we of THE COUNTRY-SIDE cannot likewise do something to carry our wish into practical effect for those who need it, but we wish you all, dear readers, a Merry Christmas.

It was with great regret that I learned that our talented contributor, Mr. E. Cockburn Reynolds, died before his article "The Monkey Temple" was published in our issue of December 8th. As in everything else which he wrote, there was graphic power, pathos, and humour in the article; and it is our readers' loss that they will not see the work of his facile pen in our columns again.

An interesting contribution to the discussion of the "Latin" names of British birds has been made by Mr. W. F. H. Rosenberg, F.Z.S., who explains in a letter that such names as "*Perdix perdix*," to which many naturalists object, for the common partridge, are inevitable: because the only possible rule to be observed is that of priority. Unless all authorities will agree to adopt the name which was first publicly given to any natural object, confusion will be endless. This is true, of course, and the rule of priority in names ought, without doubt, to be rigidly observed. But we must first be agreed as to what constitutes a "name." The full scientific name of each natural object consists of two parts:

one stating the genus, and the other the species to which the object belongs; and the question arises whether rule of priority should be applied to the full name or to the two parts separately.

In the case of the partridge, for instance, Linnæus called it "*Tetrao perdix*"—as one might say "partridge-grouse." But modern science has, very properly, divided up the Linnæan genus of *Tetrao* into a number of genera, leaving only the capercaillies to be called by that name. In this re-arrangement the birds which we may call "true partridges" were grouped together under the name of "*Perdix*," meaning "partridge"; and most authors adopted the second name of "*cinerea*," meaning "ashy-grey" to describe the particular partridge—our common grey partridge—which had been the "partridge-grouse" of Linnæus. And to this day the common partridge is "*Perdix cinerea*" in most books.

But some authors preferred "*Perdix robusta*"—the "sturdy partridge"—as its name; and to put an end to the confusion which raged on these lines all through our scientific nomenclature, the inexorable rule of priority was adopted. It was found that the first generic name given to the partridges was "*Perdix*" in 1760, and the first specific name was "*perdix*" in 1766. So the partridge, as the type of the genus, is called *Perdix perdix*, or "Partridge partridge." The absurdity of this name is manifest; and it arises, I think, from an ill-advised refusal to recognise that the "name" of a bird consists of two parts, and that the oldest correct name is that which was given to the bird when it was first placed in its proper genus.

When, for instance, "*Perdix*" was finally adopted as the name of the genus, it was not right to go back to Linnæus and take "*perdix*" as the name of the species also. The first special name which was given to the partridge as a member of the genus "*Perdix*" was "*cinerea*," or "ashy-grey"; and I hold the right name of the bird ought to be "*Perdix cinerea*," the "ashy-grey partridge." In the national museum, however, the name of *Perdix perdix*, or "Partridge partridge," has been adopted: and we must, I think, use this. At the same time if any reformer should presently arise with courage to re-name the national collection in accordance with common sense, the majority of us would be pleased.

A reader, Mr. F. Gillett Cory, asks three interesting questions about birds:—(1) Why do starlings turn half-round when alighting on the ground? (2) Why do starlings hop when wishing to go quickly, whereas they run ordinarily? (3) Why do such comparatively large birds as thrushes and blackbirds hop, whilst wagtails and chaffinches run? Taking these in order: Starlings turn half-round before alighting because they are heavy

birds of great wing-power, but with short tails. (Why they have great wing-power and short tails I could explain; but that is another question.) If they had large and powerful tails, like pigeons, hawks, or even, in proportion to their wings, finches, they would not need to turn half-round in order to check their flight and avoid striking the ground. Pigeons are, like starlings, heavy birds with powerful flight; but when they alight you see them spread their large and strong tails wide and thus check their speed, as with a strong brake. The starling, lacking this strong brake, has to "reverse engines" and alights with his head partly turned in the direction from which he has come.

With regard to Question 2, starlings hop when they wish to cover the ground quickly, because this is their natural gait as perching birds. In a tree or a bush a bird cannot step from twig to twig unless these are very close together. To make quick progress among the branches it has acquired the trick of jumping with both feet together. This, in the case of birds, we describe as "hopping," although a human being uses only one leg to "hop" with. But the starling is one of those perching birds which gains its livelihood by searching the open ground as it goes along; and this can, of course, be much more thoroughly achieved when walking or running than when jumping. So the starling ordinarily walks or runs; but when it wants to cover the ground quickly without examining it, it reverts to its natural method of progression as a perching bird. This change of gait according to circumstances is much more marked in rooks and crows than in starlings; and it is very interesting to note that rooks, which live by examining the ground, walk much more than they hop, whereas crows, which look around for food or prey, more often hop than walk.

In Question 3, there is a mis-statement of fact; because the chaffinch hops like other finches. Putting it aside, however, there remains the contrast between the hopping of comparatively large birds like thrushes and blackbirds and the running gait of wagtails. The reason of this is that the wagtail has almost ceased to be a perching bird. It always gets its living on the ground and not only examines every inch it walks over, but has always to be ready to turn like a flash to either side in pursuit of some quick-darting fly. For this purpose progression by hops would be quite unsuitable; whereas in walking or running the bird is always ready to turn sharply to right or left.

Thus, the answer to each of the three questions—and not only to these but to almost all questions regarding the actions of wild things—is simply that when creatures adopt one line of conduct instead of another, they do so because it suits their purposes best.

The series of "Country-Side Notes" which I devoted in our issue of December 15th to hints about collecting natural objects in winter did not exhaust the subject. In old stone quarries, for instance, or wherever else cliffs or piles of stones exist not far from pools of water, newts may be found by turning over the loose stones; and they will live contentedly in a vivarium or fern-case.

* * *

In barns and cellars various kinds of interesting insects, meal worms, beetles, hibernating herald worms, etc., may be discovered; but it is on mild and muggy evenings, such as occur at intervals in all winters, that the most interesting captures are made of several kinds of winter-moths, the males with ample wings and the females little spidery things almost completely wingless. These are easily found on the hedges or fruit trees with a lantern; and at the same time, by examining the grass and low herbage under the light, fat caterpillars of yellow-underwing moths, etc., may be collected. As these will eat grass they are specially suitable for dispatch to friends in towns, where they can be kept under glass until they turn to chrysalids in spring and to moths in summer.

* * *

At the seaside there is practically no difference between the seasons in the harvest of specimens which you may reap from the rockpools or along the high-water mark of each retiring tide. Shells, seaweeds, seaweed-like colonies of tiny creatures, sponges, stars, urchins, shrimps, fish, and all the curious encrustations of living growths on stone or wood or shell, with occasional surprises in the shape of rare curiosities cast up after storms, with bits of jet or amber and curious stones and pebbles—there is no day of winter when you may not make a fair gleanings of some or all of these along the shore, besides finding often dead seabirds—little auk, puffin, razorbill, guillemot, etc.—from which a head or wing or foot or at least some feathers may be taken, you cannot overrate the value of such simple specimens in illustrating the various chapters of the text books.

* * *

To a great extent it is as true of freshwater as of salt, that the seasons make little difference; and among the submerged waterweeds, watersnails of many kinds, caddis-cases, beetles, and other insects in various stages, together with little fish, make a highly-interesting collection for study at home in a bowl of water and, if so desired, for subsequent despatch to friends elsewhere. These water-creatures retain their vitality long if perched in moist water-weeds; and to nature-students in towns a little aquarium, periodically replenished with fresh creatures from the seaside or the country, is an endless joy.

* * *

Under the heading of "Deferred Moths" in our "Notes, Queries, and Correspondence" this week, Mr. W. Graham contributes facts of interest and importance, which show that those kinds of moths that sometimes "lie over" from one year to another as chrysalids are not, as suggested, prevented from emerging

in the first year by unfavourable weather. Their course of action was finally decided in the previous autumn. At that season those moths which are to emerge in the spring already show the markings on their wings through the skin of the chrysalis, while those which will "lie over" are not formed at all, their chrysalids being merely full of greenish yellow fluid. As Mr. Graham suggests, this power—only possessed apparently by certain moths which appear in the dangerous months of winter or very early spring—of holding over part of the brood for one or more years is a great safeguard against the annihilation of the species in a peculiarly unfavourable season.

* * *

But we would like to know more of the means by which this safeguard is obtained. What is it that decides whether a certain chrysalis shall produce its moth next year, or the year after, or the year after that? Does any regular proportion of each brood lie over, and is it the same from year to year? Is there any noticeable difference between the caterpillars or chrysalids which will produce deferred moths and those from which the perfect insects will emerge in the first winter or early spring? It cannot be mere chance and accident that, of a certain number of eggs laid by one moth, some will produce moths in one year, others in two, and others in three; but what regulates it? If a number of observers should during a few seasons concentrate attention upon broods of, say, the small eggar moth, it may be that the secret would be discovered; and if it should be found that, as may very well be the case, the number of chrysalids which "lie over" is influenced by the character of the weather previously experienced, we might be justified in believing that there is some connection between successive seasons in the matter of weather. Otherwise it would not be to the advantage of the moth to acquire the habit of "lying over" more in some seasons than in others. Yet the advantage to agriculture and other human enterprises of discovering any rule of sequence in the seasons would be incalculable.

* * *

In his interesting article in our issue of November 10th on the flower and fruit of the common plantain—every one knows the thin seeding spikes that we give to cage-birds—Mr. James Scott suggested that there might very likely be some kinds of insect specially adapted to fertilising the plantain. Could these insects be the various blue butterflies? All of the familiar kinds which flit about among the grass where the plantains grow have the undersides of their wings beautifully marked with minute ringed spots, which, when the wings are closed in rest, very closely mimic the appearance of the stamens on a flowering head of plantain—especially of the ribwort plantain. Is it possible that this mimicry indicates a close relationship between the plant and the insect—the latter obtaining protection from its resemblance to its favourite flowers? At the same time, we must not forget that the greater plantain, the subject of Mr. Scott's article, is specially quoted by Lord Avebury as a flower which is always fertilised by the wind and not by insects, although some forms of the ribwort plantain are admittedly indebted to bees.

Another point of interest in the flower of the plantain is the dry, inconspicuous, and chaffy condition of the corolla, which is usually the most showy and delicate part of a blossom. Mr. Scott notices the fact but without suggesting a reason. Yet there must be a reason. Plants do not acquire an inherited tendency—i.e., an instinct—to produce petals in the shape of dry, chaffy scales without good reason. There is a school of evolutionists, indeed—of which the late Mr. Grant Allen may be taken as a high type—who regard these inconspicuous, dry petals as "degenerate." They suggest that plants which produce such flowers have fallen away from the high standard of their ancestors, being content to be cheaply fertilised by the wind instead of appealing still to the æsthetic tastes of flower-haunting insects.

* * *

I think, however, that this theory is based upon human ideas rather than upon facts. To produce petals which resemble dry, chaffy scales is really a remarkable and difficult feat, seeing that petals are naturally coloured leaves. To our eyes these dry little petals may make a very poor sort of flower, but they are evidently something special in the way of evolution. If the plant had no particular need of petals, these might gradually disappear or become mere green leaves; but they would not become dry, chaffy scales unless the plant had need of dry, chaffy scales. What, then, was the plantain's need of dry, chaffy scales? A very simple one; being merely to give grazing animals, in search of juicy green food, a hint that these dry, scaly flower heads are not good to eat. So by the roadside, where every passing animal grazes as it goes you will see the heads of plantain clustering thickly. In this you see the triumph of the manoeuvre by which the plantain dresses its flowers in dry brown scales.

E. Kay Robinson.

A White Christmas.

Gold sunbeams glint above a waste of snow,
Red berries blush upon the holly-tree,
Long crystal icicles hang all a-row,
While robin sings his Christmas melody!

The chorister of Winter stern is he,
And warbles sweetest when the Yule-fires glow,
When North winds whirl across a leaden sea,
Though sunbeams glint above a waste of snow.

Chill ice-chains check the river's mighty flow,
The rush-spears stand—all frost-bound on the lea—

Fair pearly clusters deck the mistletoe,
Red berries blush upon the holly-tree.

Now village children, from their tasks set free,
Rejoice to see the pile of snow-balls grow
Beneath their hands, or slide with shouts of glee,
When crystal icicles hang all a-row.

In garden-beds the Christmas roses show,
Though fierce winds wail, and tell of storms to be,

The fair and spotless blossoms bravely blow,
While robin sings his Christmas melody.

The frost-sprites weave their shining panoply
O'er shrub and tree, and jewelled fetters throw

Athwart the mere; on window-panes we see
Rare pictures traced in ice-work chill,
although

Gold sunbeams glint!

MAUD E. SARGENT.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Strange Bird Mystery.—I can corroborate the editorial explanation of this "nest problem." In my garden is an ash tree in which is a small hole, about the size of a halfpenny, leading into a cavity in the tree. In this hole blue tits have every year built a nest for upwards of twenty years, but the hole is constantly growing up, and has to be cut out, sometimes twice a year, to enable the parent birds to enter. I have found as many as three nests and eggs in a single nest-box in my garden at the end of the year, where the parent bird (tree sparrows) have deserted their nests or been killed.—JOHN R. B. MASEFIELD, Rosehill, Cheadle, Staffordshire.

To Recover a Ferret.—Anent a statement in your "Mixed Bag" of a recent issue, a ferret which has "laid up" will not always appear the next day if a dead rabbit is used to entice it from the hole. Much depends upon circumstances. When the rabbits are very numerous, the ferret that is lying up is usually amply provided with food, and spends the time in its cosy quarters in eating and sleeping. I have, however, noticed that they, after a few days of this, are very thirsty, and milk is a successful enticement when they have shown themselves at mouth of hole. Sometimes, again, the ferret is over the rabbit—that is, between a rabbit that it may or may not have killed—and the terminus of hole. Then it either has to eat its way out, or wait until the rabbit moves; perhaps to remain a prisoner until death occurs. It is an astonishing fact that rabbits often allow the ferret to scratch all the fur off their backs rather than bolt. All kinds of means are tried to entice ferret from hole—among them, pegging down freshly killed and opened rabbits at mouth of hole, tying a paunch on end of a long elm or pliant stick of some kind, and pushing in holes as far as one can reach. Turning another loose ferret in will sometimes effect the purpose, and sometimes a ferret with cord attached will discover its whereabouts and disturb it. Sometimes the holes are blocked, leaving but one open at which a well-baited ferret trap is placed.—E. J. BROWNE, Baylham, Ipswich.

Rabbit and Weasel.—A gang of potato riddlers recently working down Holbeach Marsh estate one morning, "put up" a full grown rabbit, which ran quickly up a bare headland direct for the warren. The workmen, knowing the rabbit's fleetness when pursued in sight of its home, were surprised when suddenly it stopped, crouching upon the

headland until some of them came up, picked it up, and killed it, whilst the others were engaged in hot pursuit of a large weasel.—J. J. TOWNS, Holbeach, S. Lincs.

How Bananas Grow.—Many people eat bananas, but few, who have not travelled, have seen the fruit growing, or the curious brown sheath which protects the young flower. These sheaths drop off as the fruit sets. The hanging down encloses undeveloped flowers. The banana has to be grown under glass in Britain, and wants plenty of heat and moisture.—FRANK M. SUTCLIFFE. [Besides covering the flowers, the large reddish-brown sheaths must have some other meaning, because they are so very conspicuous from a distance, looking as though some large, dark crimson bird were hanging with outspread wings to the end of the fruit-clusters.—ED.]



Photo.]

(F. M. Sutcliffe.)

A Banana Plant.

Showing clusters of bananas in various stages of development, and the large sheaths at the end which protect undeveloped flowers.

The Painted Lady.—In your issue of November 24th it is stated, in answer to a correspondent, that the Painted Lady butterfly "lives through the winter." Is this now an established fact?—I mean, with regard to the larger number of them. You, I expect, remember the swarm we had of them in 1903. In the *Field* of November 14th, 1903, Mr. F. W. Frohawk contributed a long article on "The Migration of *Cardui*," in which he gives one to understand that the Painted Ladies of the autumn (as a whole) are descendants of immigrants earlier in the year, and not of those which have hibernated in this country. It would be interesting to know how far this testimony is borne out by others.—(Rev.) E. S. LEWIS, Whittington, near Oswestry. [The answer referred to was intended merely to

explain why October 13th was not an unusually late date on which to see a Painted Lady butterfly, and not as a statement that this butterfly successfully hibernates in Britain as a rule. I think there is no doubt that the great swarm of 1903 was composed of autumn immigrants; not that, as a rule, the Painted Lady fails to hibernate in Britain.—E. K. R.]

One-winged Bird.—I caught a wagtail which had only one wing, from birth apparently. It could run very fast, and I should not have been able to catch it had I not been able to follow it some distance across a park on a bicycle.—A. D. BOULDEN, Monchelsea, Maidstone.

Singing of Insects.—I have been greatly puzzled to account for the humming (or singing) produced by the hover fly (*Syrphus*) when captured. This sound is similar to that caused by the vibration of the wings of the bluebottle when caught in a spider's web, only pitched in a much higher key. I have observed these interesting insects many times through a powerful glass, using a wooden match-box with a glass lid to contain the fly and allow it freedom of movement, but have failed to ascertain what occasions the sound, which continues at short intervals without the slightest apparent movement of the insect. The sound made by hover flies when on the wing is entirely different from the singing or humming referred to when the fly is stationary. I have experimented with many other kinds of flies, none of which appear to have the same power of producing audible sounds when settled.—H. S. WOODWARD, Falkirk, N.B. [I have noticed that hover flies, engaged apparently in rivalry and courtship, have the power of making this sound even when seated motionless on

a leaf.—E. K. R.]

Mixed Clutches.—I was one day last summer removing the sparrows' nests from under our house tiles, when, in one nest I found two eggs of house-sparrow, one of tree-sparrow and one distinctly coloured egg of hedge-sparrow. I destroyed both nest and eggs. About two or three weeks later I found, about one hundred yards away, a hedge-sparrow's nest containing two eggs of hedge-sparrow and one distinct egg of house-sparrow. This raises the question: "Did these clutches belong to one bird?"—J. J. TOWNS, Holbeach, S. Lincs. [Was it not possible that some one had been changing the eggs?—ED.]

"Taking the Waters."—I thought the enclosed photograph—taken at Humberstone, Lincs., this year—might interest readers of THE COUNTRY-SIDE. It shows a sheep drink-



Phot.]

[F. L. Atkinson.

"Taking the Waters."

A sheep drinking from an ironstone spring.

ing from an ironstone water-spring at the place named and evidently getting some enjoyment from the cooling draught.—J. L. ATKINSON, Honor Oak, S.E.

Deferred Moths.—In the note on the December moth, figured in "Wild Life of the Week" in No. 80 of THE COUNTRY-SIDE, reference is made to its supposed habit of delaying emergence for a year if conditions are not suitable for it at the due time? Now, Sir, is this quite correct? I do not know the habits of the December moth itself, but I do know other species which frequently "lie over" in this manner—e.g., the small eggar. In this case the moth is due to emerge in February or March, and the pupæ from which moths will emerge in a given year contain the formed insect as early as the previous August or September, when the pupæ that will lie over show no external signs of development. I now have a few pupæ from larvæ found in 1904. Most of the moths from the batch came out in February and March, 1905; and when, soon after, I opened two of the other cocoons I found fresh-looking healthy pupæ inside. In September of that year I observed that one of these was now dark-coloured and that the white spots of the wings were visible through the wing-coverts. The other was still yellow and undeveloped, and both were rather shrivelled. The moth from the first duly emerged, with others, in February, though the second pupa died. However, three pupæ still failed to produce moths, and all, on being opened, showed healthy, yellowish pupæ. In August all these were darker, owing to the development of the moth, and at the time of writing the wing markings are in each case clearly visible. These observations, supported by others of a similar nature on other species, seem to prove that it is not the condition of the weather at the time a species is due to appear that regulates its emergence, but that this is determined some months beforehand. In this way nature provides that, should the weather conditions in any one year be particularly unfavourable to the species, a few individuals of every brood will be ready to carry the race on to the following season.

In this connection it is worthy of notice that the species most liable to lie over in this way are those that appear at a time when the weather is likely to be unfavourable, and those whose larvæ feed late into the autumn, and are thus liable to have their food supply cut off before they are fully grown.

Can you, through your valuable little paper, give any further information on this subject; as to whether the proportion of individuals of

a brood that lie over remains fairly constant, both in different broods, and from year to year; or as to whether a perfect moth, though inactive and enclosed within the pupal sheath, can survive a summer without nourishment?—W. GRAHAM, Barnes Common.

Many-toed Cats.—I was interested in the note re six-toed cats, inasmuch as such cats in our district are common. I have endeavoured to trace their history, but so far have failed, though a friend remembers distinctly an eight-toed cat which was the property of his father forty years ago.—R. H. TYLER, Osborne House, Laugharne.

A Confident Swallow.—While a friend of mine was fishing in the River Weaver, near Northwich, a swallow flew on his hand, apparently choking, with its beak full of insects. He cleared the beak and gave the bird a drink. It flew away, but returned to his hand. He gave it another drink, and it then flew away altogether.—THOMAS BURROWS, Grappenhall, Warrington.

Skylarks and Valleys.—Re Mr. Edwards' note on skylarks avoiding valleys with high hills on both sides, I should like to say that in more than one instance I have found this to be the case. Last spring some friends and I noted it in a valley in Perthshire, where at the mouth of the valley and on all the surrounding fields larks were singing, while in the steep-sided valley itself the bird was never seen or the song heard.—G. A. W., Edinburgh. [I have noted the absence of skylarks from the deep valleys of Devonshire.—ED.]

A Marked Sparrow.—For three years past a very familiar object of interest here has been an albino sparrow, which generally puts in an appearance after the nesting season. I have not seen or heard of it this autumn, but to-day (November 17th) I have seen one much more decidedly marked—the whole of the tail quite white, also the lower portion of the wings. Would a moult bring about this decided change of marking, or do you consider this newcomer is related to our old friend? To what age does the ordinary sparrow attain?—ALBERT HILLMAN, Hailsham. [A moult might certainly produce the change; but the new bird is more probably a child of the other. The average length of life of a sparrow is less than one year; but those birds which survive the fatal first year probably live for about four or five years.—ED.]

Need Moles Drink?—When walking upon the downs near Southsea, I have often seen moles busy at work. Their home is 600 ft. above the sea level, and the nearest water is some 1½ to two miles off. Moles in the valley drink at intervals, but upon the downs they must exist without water, for a careful search has failed to find any means whereby water could be obtained. For years the moles have existed upon this elevation—apparently without water, for although dew would assist them at some seasons, at others it is absent. Can it be that the moles have, by a gradual course of evolution, determined by their environment, lost their dependence upon water.—ERNEST H. WHITE, Southsea. [All authorities seem to be agreed that the mole is a thirsty animal, and that it never makes its fortress far from water. Or 2 and a half miles seems, therefore, a very long way for it to go to drink.—ED.]

"Spare Hawk."—I am an old-time country schoolmaster, but I never heard a native use the word "spare" hawk. Jim will tell you he "took 'is spar' net up to de pahson's, an' set it 'gin de ivy, and got a 'em-an-all o' spar's sure-li; den, nix day missus put sum an 'em in de pie." But Jim's daughter is in service in town, and wishing to show "airs" when she comes home, tells her father he shouldn't say "spar," but "spare"—not giving it a thought that the old man means "sparrow." Elision of letters and syllables is a very notable feature in the vocabulary of the real native. I could give many instances of this. One now occurs to me on seeing a para-

graph in THE COUNTRY-SIDE. "Jack-ern" puzzled me for a long time; "Jack Heron" I now know it to be. Why the prefix "Jack" attaches to so many country objects I never could make out.—F. W. ELLIS, Scotsford House, Tunbridge Wells.

Rats Swimming Together.—Is it customary for rats to swim about together? Yesterday I saw two very large rats swimming, not more than two inches apart, up and down one small portion of a stream as though looking for something, and apparently unconcerned at my presence, although I had made a considerable amount of noise.—T. RUMNEY, Repton.

Nesting Boxes for Next Spring.—I notice you have not yet reminded your readers to put up next season's nesting boxes in the autumn instead of the spring, as you did last year. I have found that the birds in my garden always prefer old and seasoned boxes (that have not necessarily been used before), to ones put up in March or early April. I don't know whether this is the general rule.—C. L. COLLENETTE, Woodford Green.

Great Tit's Left Foot.—It is perhaps not well known that when a Great Tit eats a caterpillar of small size—viz., not requiring the use of both feet to hold the insect—it will almost invariably grasp the larva under its left foot. Amongst the many Great Tits I kept in an aviary one—an old male—used its right foot when emptying a mealworm; but this very bird invariably used its left one on every occasion I gave it a larva of small size.—J. G. KEULEMANS, Ilford.

Interesting Feathers.—In THE COUNTRY-SIDE of December 15th the collecting of feathers was recommended as one form of nature study which can be carried out on country rambles in the winter. Among the most conspicuous feathers to be found along out coasts in winter are those of the curlew; and here is a photograph of two tertiary feathers—or inner-secondaries, as they are now more usually called—and two of the underwing-coverts of that bird. Apart from their markings, which



Photo.]

[G. Parkin.

Curlews' Feathers.

Two inner secondaries, showing how they become notched through the wearing away of the white parts, and two under-wing coverts.

must have a distinct meaning and history, the way in which the first two feathers are notched is very interesting; because you may find that similarly-marked feathers of owls, etc., become notched in the same way. Apparently the light-coloured parts of such feathers are less durable than the dark bars, and as they wear away the feather becomes notched. But it would be interesting to know how and why the dark parts of a feather wear best.

THE COUNTRY-SIDE.

A Journal of the Country, Garden, Poultry,
Nature, Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, DECEMBER 29, 1906.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed "& Co."

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THE COUNTRY-SIDE,
2 and 4, TUDOR STREET, LONDON, E.C.

The Cruelty of Nature.

MR. THOMAS HARDY'S writings exhibit an extraordinary feeling for the inanimate world around him. He shows us nature—not in plain, yet glowing reality as Richard Jeffries does—but by the light of his imagination, and shows it as a sphere full of action, even of tragedy.

The wood to him is full of spirits; every tree is a Hamadryad. A subtle sympathy, like the vague music of an Æolian harp, runs through his best descriptive passages and thrills us as we read.

But when we come to look closely at his view of nature, we find that it suffers from the same defect that warps his view of human life, which twists it ultimately into an untruth.

The poem of the "Ivy Wife" may be taken as an instance of this. He sees in the beautiful clinging evergreen the type of the wife who pulls down her help-meet and ruins him who has sustained her; and, pleased with the thought, he runs through the varied characteristics of the forest trees with a masterly touch.

But I venture to doubt his reading of a natural fact. For if we walk observantly through the woodlands in November days when the last few leaves cling to the tops of the trees we see tree after tree clothed with ivy and no injury done to the tree. The ivy, after long waiting (through the summer enjoyed by its partner) for its turn of sunshine, puts forth now in the low light its green flowers that draw the late insects for honey and will presently provide fruit for the birds in the bitterest time of winter.

The ivy might just as truly be taken as the type of the patient wife who is shadowed by her stronger and more selfish partner through the summer of life, and who, when adversity comes, brightens into bloom and keeps off from him the dank rains of adversity. A variant this of Scott's "Oh, woman, in our hours of ease," and an entirely different view from Hardy's.

I have known the ivy to hold up a derelict oak, dropping with age, by its joint clasp of a young rowan tree alongside.

In our Rydal woods we have great old oak trees that not only support the ivy, but carry on their crowns living bushes of holly, and of rowan, as well as many a smaller growth—types these of the strong man in life who helps others by his strength.

If Mr. Hardy had wished to pick from nature a type of the Rosamond-Viney woman (of whom we hope, after all, there are few in life) he should have taken the honeysuckle, which is actually capable of strangling a young tree by its embracing coils. It is cut out here by the woodman, and occasionally not before it has made a deep scar in the bark.

To enlarge on one small point might seem unjust, if it were not that the sardonic view of nature and of life expressed in this poem is typical of its author, and is unfortunately shared by a good many of our modern writers. Mother Earth, in whose lap all life is bound to lie, is no longer seen as a strong maternal power, but as a fierce hag, who devours her own brood. Our latter-day poets and naturalists have caught the catch-words of the men of science and prate endlessly of the struggle for existence and the survival of the fittest.

Even Tennyson, fully alive to the beauty of the material world, could speak of "Nature, red in tooth and claw," while Mr. Hardy, in his poem, "In a Wood," retreats from the grim sight of spite and murder done by the trees, equal to any done by man, and without man's social amenities to gloss them over.

How different this from the old view of nature! Chaucer left bed and book to see the daisy open to the rising sun, while the "foules" sang; his cry at the sight, "So glad am I!" comes down to us through the ages with a note of rapture. The Elizabethan poet saw the outside world as not only full of beauty, but of joy. "Come, live with Me," sang Kit Marlowe with a light-hearted certainty that woods, or fields, or "sleepy mountains" could yield nothing but pleasure. Nature—gay, jocund nature—was only cruel in her indifference to man's moods, and to his individual misery of the moment.

"Ye'll break my heart, ye bonny birds" has been the answer of many an aching heart to the too palpable rejoicing of nature's lesser broods.

Then which is the true view of nature? Is she cruel or beneficent? sad or joyous? Is the inanimate world really full of strife and suffering as these latter-day pessimists tell us it is?

M. L. A.

An English Breeding Ruff.

By C. E. Milburn.

INSTANCES of the ruff breeding in this country during recent years are so scarce that one cannot help feeling pleased in being able to record some observations of it having done so.

The extensive marshes of the Teesmouth district is the locality where Mr. T. H. Nelson, Mr. C. Braithwaite, and the writer have studied the habits of *Machetes pugnax*, but it would be unwise to localise the spot too closely as the birds may still haunt the place.

In the summer of 1901 C.B. and I saw a ruff and, as we thought, one reeve on half a dozen occasions, but could not get any clue as to where they were nesting. However, after noticing four reeves in late July we determined to work the marshes thoroughly the following season, and on May 8th, 1902, we were rewarded by finding the ruff with two reeves at a swampy stretch of the marsh. On approaching them too closely the reeves would fly away and settle further on, the ruff following in close attendance.

Upon alighting he would lower his head, extend the frill and ear tufts, and with wings trailing on the ground run round the reeves in a manner suggestive of a game cock. This performance constituted the "showing off," and one point in particular we noticed was that when standing erect the frill and tufts were always pressed close to the body.

When showing off the head was always pointed downwards as far as we noticed. This ruff had a light brown frill with a black

edge, the ear tufts being black. By the 14th one of the reeves had laid four eggs, and a few days later we went to take pictures of the nest. On approaching the place the female ran off the nest, and when about fifty yards away began the broken wing and leg ruse to entice us away.

The ruff stood in some long grass watching us until we had exposed a few plates, but when we were moving away he flew up and went ahead. He hovered above a patch of long grass until the second reeve flew out of it and went away with him. A search failed to reveal the nest, so marking the place we went away for an hour.

On returning the ruff again "called" the female off, and a short search revealed the second reeve's nest with three eggs which was photoed straight away. Both nests were in fairly dry patches of long grass, and both nest and eggs of the ruff looked a compromise between a snipe's and a redshank's.

Up to this time we had not heard either ruff or reeve utter a single note, but when near the nests the females uttered a scarcely audible "teeut, teeut," and for a member of a usually noisy family *Machetes pugnax* is a most remarkably silent species.

The second reeve showed us very effectively how ground breeders manage to save their nests from being trampled upon by cattle. A cow was feeding very close to her nest and it seemed as if the bovine's onward progress would result in the destruction of the eggs. A step further would have sufficed when the female flew straight at the cow's head and apparently flicked it with her wing. The animal, much surprised, turned at a right angle and continued feeding in the new direction, thus saving the nest.

After our last visit on May 20th both sets of eggs were flooded out and we secured the eggs later. The 29th found the ruff very busy with the first female in a clump of long grass where he spent hours in quiet courtship with very little "showing off." By June 5th his wife was busy nest building, and the ruff was paying attention to his second spouse.

A week later both reeves had nests with eggs again which the ruff had to defend against redshanks and lapwings, who, in their anxiety for their young, came too close to his mates' nests.

The first reeve hatched out all right and I caught three nestlings about a week old, but quickly released them as the female was most pitiful to watch. She rolled on the ground and with wings and legs extended laid finally on her breast as if in the last throes, so at that I had to forego my intention of carefully noting the difference between the nestling ruff and redshank.

The second reeve was less fortunate, for after sitting a week she was again flooded out. She laid a third set of eggs within ten yards of the washed out nest, and at the third attempt was successful in taking young away all right.

I have read that the ruff deserts his females as soon as they begin to sit, but this is not our experience, as it was not until the second reeve hatched out that he left the vicinity and began to shed his adornments. With the exception of a few glimpses of him running through the long grass with a scraggy looking head we saw very little of him until the following May.

In 1903 the birds returned and reared young, and in 1904 they chose another part of the marsh and defied our efforts to locate the nesting ground. When it is considered that the birds prefer to run through the grass like a crane and do not circle round like a redshank unless one is standing close to the nest, it is no easy matter to locate three birds in as many square miles of rough boggy marsh. Consequently I like to think that the ruff still breeds here, even if it has beaten us, and in other suitable places the bird most likely is an over-looked breeder.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

THE advent of an adult male Mandrill (*Cynocephalus mormon*) has been well discussed in the press, and I can strongly advise those who have heard of it to go and see what is one of the most wonderful beasts in the world—a creature which, with its red nose, blue cheeks, and yellow beard, vies in colouration with many birds. The present animal strikes me as less brilliant in colour than those I used to see in captivity in Calcutta, where the temperature is naturally more congenial to a West African animal.

The full colouration is only seen in the male Mandrill, and it takes several years for him to attain it, so that such specimens as this are always rare in captivity.

Another strange African beast recently received is the Hunting Dog (*Lycan pictus*), the Wilde Horde of the Boers. This is a leggy, hyæna-faced brute, with a curiously patchy tortoiseshell coat, a deadly enemy to game animals and cattle.

Like the Red Dog of India, it does not

Seasonable Notes.

DURING the winter months the poultry fancy invariably recruits its ranks, and many new poultry-keepers take up the culture in real earnest.

It is always advisable to start well, but there is no need for inexperienced persons to pay outrageous prices for their stock, which should by all means be pure; for whatever may be said for the merits of cross-breeds, there is no question to my mind that from an all-round point of view it is best to keep to pure breeds.

Other things being equal, a pure-bred bird will always fetch a higher price than a cross-bred one; while it must be remembered that a cross-bred chicken costs quite as much—and often more—to rear as a pure-bred one, which is convincing proof of the advantages to be gained by pure-bred poultry, for which there is a rapidly increasing demand.

poultry-breeders, and should be read by all who wish to see the advancement of poultry in Great Britain.

The comparison of the methods and ideals adopted by Americans cannot fail to benefit the country, for in order to rightly understand the development of any pursuit it is very essential, I consider, that we should know what are the conditions under which it has grown and the ideas which are in the minds of those engaged in the working. In no case is that of greater importance than in poultry-keeping.

As the writer very wisely points out, European methods are not American, and *vice-versâ*.

We live in an old country, thickly populated, where for ages past poultry have been kept by farmers, generally to a small extent, but in some instances on a larger scale.

Profitable Poultry Culture.

By "Chanticleer."



Photos.]

An Adult Male Mandrill.

The Arctic Fox.

[W. S. Berridge, F.Z.S.]

Two recent additions to the London Zoo.

attack man, but fears him little, and will attack and pull down the most powerful quarry. Even the lion appears to fear the spotted pack, and the splendid and gallant sable antelope and the fierce gnu fall victims to them. I need hardly say that neither this nor the Asiatic animal has anything to do with the origin of our tame dogs, nor are they, curiously enough, nearly related to each other, as may be seen now that the rare opportunity of studying them side by side is afforded to the public.

In the same range of dens, also, the two Arctic foxes are worthy of notice; one of them, it will be seen, is deep sooty-grey, and the other white. The white one in summer becomes grey over the upper parts of its body, while its companion is much the same at all times.

This agrees with what has been observed in this animal in the wild state, for the Arctic fox is one of those species in which the adaptation to its surroundings is not yet perfect; the case is curiously paralleled by that of the white and blue snow-geese recently mentioned in these notes.

Of course, in buying stock for the breeding-pen my readers must not expect to get good birds at killing prices.

All genuine poultry fanciers or breeders have expenses to meet to keep up their yards, and any exhibitor who has been successful in the show arena or the utility poultry world cannot afford to sell his stock at the price of common nondescript fowls.

The prices obtained from time to time for the eggs for sitting (even if sold for a moderate sum), also the surplus stock, are invariably sufficient to repay the initial outlay and set up a good stock of profitable pure breeds. I must admit that much deception is practised in the selling of fowls, but I shall at all times be pleased to give the names and addresses of genuine poultry-breeders or to obtain any description of stock for my readers' benefit.

The Poultry Industry in America.

I have been interested in perusing a most instructive work (rs.) by Mr. Edward Brown, F.L.S., who has visited America and Canada on behalf of the National Poultry Organisation Society, 12, Hanover Square, W.

It is full of valuable information to

From this basis the poultry industry has been evolved, gradually built up in the general farming of the country and for generations left to the farmer's wife.

A change has now taken place, and matters are slowly improving. In America poultry shows are much less numerous than with us; the distances to be traversed are greater; whilst the demand and prices for high-class specimens are on a low basis—in fact, in Canada and the States there is a much greater affinity between the exhibitor and the utility breeder, who are often one and the same.

On perusing the various chapters of Mr. Brown's work, I learn that White Leg-horns are the principal breeds kept in the States, which are preferred by reason of the fact that they are active, hardy, and excellent layers.

The hens are kept for two years, and only the second-year birds are used for the breeding-pen, whilst for the production of eggs young stock are always relied on. Hatching is commenced in the late autumn, but the majority of chickens are hatched in April.

The Week's Wild Life in Pictures.

(See page 103.)

THE common holly (1) is the solitary British representative of its family; for, sturdy as the hollies look, they prefer warmer lands and even our own holly cannot thrive in a wild state in North-Eastern Scotland. Where the holly grows into a large tree, it is interesting to note how the lower branches, which browsing animals might reach, bear very prickly leaves; but, higher up, where the leaves are safe, they abandon these defences. Not all our hollies bear the bright berries which we always associate with Christmas, because a proportion of the trees have male flowers only; and of the fruitful trees not all bear red berries, because sometimes these are yellow. The birds care little for holly berries until they have exhausted all other food; so, after mild winters, the holly will be found still carrying its berries in the next summer.

2.—The oak when leafless can be distinguished easily as a rule from all other trees, because its upper branches spread out more widely in proportion to the height of the tree, often giving the whole the outline of a mushroom. None of the branches, moreover, grow straight: even the thin shoots have many bends and twists. Sometimes the elm, especially when it is exposed to severe winds, grows in the same way; but it always has a network of finer twigs than those of the oak, which seem to carry even to their tips the gnarled and sturdy character of the parent tree.

3. On a sunny summer morning, the spider's webs upon every bush and bramble gleam like diamond jewellery; but even then they are scarcely so beautiful as the silver tracery into which hoarfrost converts them. The web of the net-spinner shown here, with its threads crossing and recrossing at all angles, lacks the symmetry of the beautiful structures of orb-spinners like the garden spider; but it is a miracle of cleverness and, when covered with frosted filagree, a thing of beauty too.

4.—This is a pleasant little sight which any who have gardens, and some who have not, may enjoy all the winter through, within a foot or so, if they please, of their windows. All you need to do is to hang up a cocoanut with a hole cut in it, and when the tits have emptied it, fill the shell with any sort of scraps of food, or with fat, etc. There will be fun going on round that cocoanut through all the hours of daylight, in all the days of winter.

5.—In Christmas fancy the holly and the mistletoe seem linked in the same way as the robin and the wren in nursery lore. As Christmas decorations "holly and mistletoe" might almost be run into one word. Like the holly, the mistletoe is the sole British representative of a family which is numerous in warmer lands; and, as with the holly, the birds care little for the berries of the mistletoe as a rule. Only the mistle thrush takes them readily, and gets his name from the habit. In so doing he spreads far and wide the material which is used with such deadly effect against the feathered folk. For the mistletoe has acquired such extreme sticki-

ness in the pulp surrounding its seeds that this is one of the best constituents of bird-lime.

6.—The gudgeon is easily recognised as a small, rather straight and narrow fish, with two small barbules hanging from its upper lip, and dotted stripes across its tail and back fin. A six-inch gudgeon is a fine specimen; but occasionally they run to eight inches. By scraping up the gravel in the stream with an iron rake the gudgeon are attracted to the spot in search of food, and you may then catch several dozen of them in quick succession. "For the reason that the fish require so little skill to take them, gudgeon-fishing has always been a favourite pastime with the fair sex." For the same reason, the name of "gudgeon" is applied to a person who is easily taken in.

Astronomy for Beginners.

THE study of astronomy is such an interesting and fascinating one that probably many people, after reading each of the interesting articles given from time to time in recent issues of THE COUNTRY-SIDE, will feel their enthusiasm aroused, and would perhaps be inclined to study it practically but for an impression which is rather common—that nothing can be done without a first-class telescope and an intimate knowledge of the science.

This, however, is not the case, and a beginning can be made without any instrument at all by acquiring a knowledge of the constellations either from maps or, better still, from someone interested in the science.

With the aid of a small telescope many interesting observations can be made; in fact, it is astonishing how much can be seen with a good pair of opera or field glasses.

If a pair of glasses is directed, say, to the constellation known as Ursa Major, the Great Bear, or sometimes the "Waggon and Horses," the observer will be surprised at the number of stars to be seen which are quite invisible to the unaided eye; or a more beautiful object will be found by looking towards the Eastern horizon at about 10 o'clock. There is a group of small bright stars, easily seen as a group without a glass, as it is the most conspicuous object visible in the East. With a pair of glasses this is a magnificent group—known to astronomers as the "Pleiades"—and a close examination of the Eastern sky will amply repay the observer, disclosing numerous stars quite invisible without an instrument of some kind.

With a small telescope of, say, 1½ in. or 2 in. object-glass, the sun and moon become objects of never-failing interest, but some sort of a stand is necessary to support a telescope. The surface of the moon, of course, remains the same, and only one side is ever presented to this earth; but the phases through which it passes during the month bring into view the magnificent craters such as Tycho, Plato, Copernicus, and others, which are easily visible in even a very small instrument.

The sun is, perhaps, the most interesting object to be observed with a small instrument, since its surface is in a state of continual change and activity owing to the frequent appearance of sun-spots. These can be observed by using suitable dark glasses, which anyone with a little ingenuity can manufacture for himself, always taking care not to look at the sun without a sufficiently dark glass, as irreparable damage may be done to the eye.

Dark glasses to fit over the eye-piece of the telescope can easily be made as follows:—Take a cardboard tube the exact size required to slide over the eye-piece, or, if larger, paste a thin piece of card inside, cut about 3 in. long.

Postal tubes or shaving soap-boxes answer the purpose admirably. Cut two discs of cardboard same diameter as the tube, and in these two holes, one the size of a threepenny-piece and one larger.

Glue the one with smallest aperture at one end of the tube, then obtain from a glass merchant several circular pieces of coloured glass smaller than the cardboard tube—a dark murky red glass and a dark green one together will usually be the best. Place these in the tube, and then fit in the other circular piece of cardboard, which should fit tightly but not be glued, so that the glasses may be cleaned when necessary. The dark glass is then complete.

A number of these can be made for a few pence, with glasses of different shades so as to be useful in hazy weather or when the sun is near the horizon, and from experience I can state that they are very useful. A lens from electric light spectacles will also answer the purpose.

Jupiter, Saturn, Mars, and Venus can, of course, be observed with an instrument of this size, but a rather more powerful one is required to show them to advantage. A certain number of double stars are also visible, and the enthusiast will not be deterred by having only a small instrument at his disposal. I do not think anyone taking up the practical study of astronomy is ever likely to regret doing so. It is one of the most peaceful and interesting sciences to which human beings can devote their minds.

ASTRO.

Our Photo. Competition.

Photographs intended for the December competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrush's.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Mistle-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Pills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

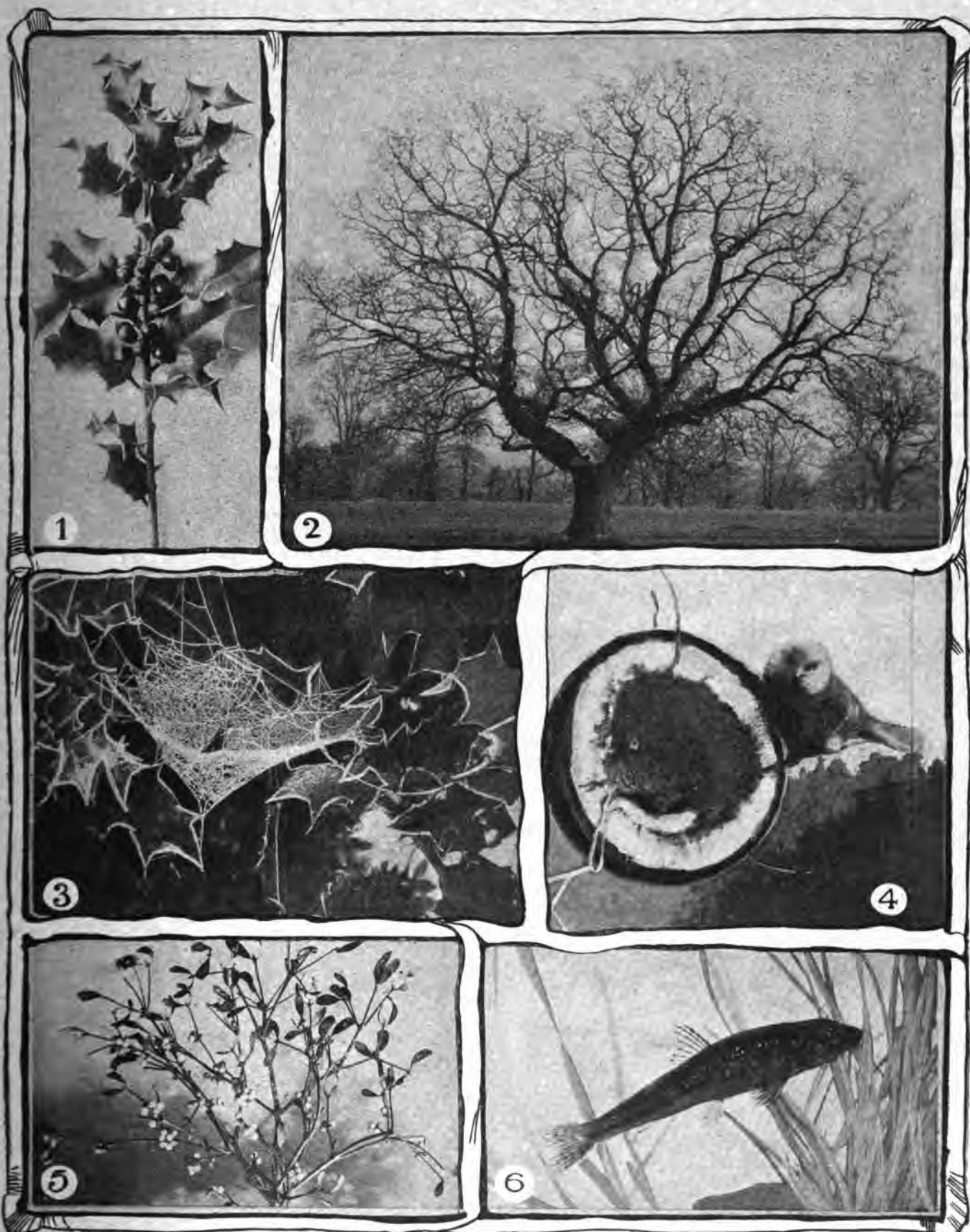
31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

WILD FLOWER SERIES, 2s. 6d.

1, Musk Thistle, Wayfaring Tree, etc.; 2, Sweet Woodruff in bloom; 3, Wild Hyacinth and Dewberry Bramble; 4, Broad-leaved Garlic and Yellow Dead-nettle; 5, Dandelion, in fruit; 6, Red Campion, and woodland herbage; 7, Butter-bur; 8, Wood Sorrel, amid herbage; 9, Cuckoo Pint; 10, Wild or Dog Rose.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 102.)



1. Holly, *Ilex aquifolium* (G. H. Dean). 2. Oak, *Quercus robur*, in Winter (B. W. Lovejoy). 3. Hoar Frost on Holly and Web of Net Spider (B. Hanley). 4. Tomtit, *Parus caeruleus*, on Cocoanut (Rev. S. N. Sedgwick). 5. Mistletoe, *Viscum album* (G. Parkin). 6. Gudgeon, *Gobio fluviatilis* (S. and W. Johnson).

Amateur Photography.

PHOTOGRAPHING FUNGI WHERE THEY GROW.

By J. H. Crabtree, F.R.P.S.

(Illustrated from Photographs by the Author.)

INTEREST in the study of British fungi has grown appreciably in recent times. Since we can now obtain records of these interesting growths they give us an increased desire to search out fresh fields with new genera.

As there are several hundred varieties of fungi in Britain we should have little difficulty in discovering, almost in any rural part of the country, some of the commoner kinds.

The photographer, therefore, can find ample occupation among the fungi. The work is most fascinating. Go forth, then, with a determination to succeed and you will have a coup of good negatives.

It is, to some extent, a rough and tumble business. Many fungi have a knack of growing in places which are almost inaccessible; others grow on an awkward incline of argillaceous earth; while others flourish at the roots of trees which are perilously near a deep stream. Further, at this season of the year after rain or sleet, the woods and hilly roads are very slippery; and it happens now and then that both camerist and camera come to grief like a pack of cards. Have a good pair of boots when toadstool hunting—they are as necessary as the camera itself.

This instrument need not be elaborate; it must be strong and possess more movements than the usual half-guinea specimen. We have to stoop very low to the toadstools themselves. They are not like trees and many flowering plants where we have both latitude and some longitude. They generally lie on or very near the ground and the lens must look at them at close quarters.

A doublet or anastigmat of five or six inch focal length is the one suited to the work, using a quarter-plate camera; and really no appreciable advantage comes from using a half-plate unless one is content to carry a heavier weight in plates and apparatus.

The camera-bellows must be capable of extension to twice the focal length of the lens, that is about twelve inches at least, so that we may photograph examples of smaller genera their exact size.

Further hints as to the photographing of fungi will be given in the next issue of THE COUNTRY-SIDE.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three coupons (similar to that on the back page), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Rooks and Rain.—I have not noticed that rooks fly round and round in an unsettled manner before rain. They do, however, fly in that manner, often rising to a great height, when they have been disturbed from one feeding-place and are looking for another. Of course, when a storm of rain is actually coming across the landscape, the rooks and other

"Spiderland."—This book is by Mrs. Rose Haig Thomas, published by Grant Richards. —(to R. HANCOCK, Stechford.)

Deer Hunting.—I do not know why the R.S.P.C.A. do not take energetic action against tame deer hunting—which is very different from the hunting of the wild red deer in the West and North. It is, however, a moribund sport: because public opinion is on the side of the deer.—(to H. LAWRENCE.)

Sun and Fire.—I have always supposed the idea that the sun puts out a fire to be a popular error, owing to the fact that when the sun shines on a fire you can hardly see the light of the latter, but can see the ashes plainly. Certainly the sun seems to have no checking effect upon forest fires or fires on commons.—(to Miss S. DEANE.)

Flocks of Birds.—The three close flocks over a hundred yards long and five or six yards wide of birds "about the size of starlings" which you saw flying in the same direction, were surely starlings flying to a roosting place, where these birds assemble by thousands now.—(to A. H. COTTON, Southampton.)

A Scolding Squirrel.

—Where squirrels are not molested they soon become bold and scold you at quite close quarters when you enter their haunts.—(to G. F. QUORN.)

Ailing Hedgehog.

You hedgehog which is in a weakly state is in a decline. Many captive hedgehogs die in this way and it should be remembered that these animals belong to the order of Carnivora and, therefore, require something more than bread and milk as their staple food. Meat, either raw or cooked, eggs, worms, grubs, etc., should be occasionally given. Hedgehogs hibernate like the tortoise and a box filled with hay or dry leaves makes a good sleeping place. Try yours at once with some raw meat.—(to Miss POWRIE, Clapham, S.W.)

Stoat and Woodpecker.—Yes, of course the stoat can climb with great dexterity and in this case had no doubt stalked the green woodpecker up the elm and caught it near the top.—(to J. NORMAN, Severn-Stoke, and Miss M. WILLIAMS, Worcester.)

Seeds for the Birds.—I do not think it would be worth while to scatter bird-seed in the country in winter. It would mostly be eaten up by sparrows and mice; and the birds which suffer in severe weather are not the hard-billed birds which eat seeds.—(to J. H. S.)

Wren's Song.—No, it not at all unusual to hear the wren singing in December.—(to C. A. SPEYER.)

Rooks and Crows.—Yes, the rook is one of the "crow-birds"—which is merely a convenient phrase for referring indifferently to crows, rooks and jackdaws. The crow is more powerful and has a stronger bill than a rook; it never has a bare grey face like an adult rook; and if you turn up the body feathers of a crow you find them white underneath, where the rook's are grey. Their voices are quite different, the crow usually saying "kurrak" and the rook "caw."—(to C. WHITELEY, Ripponden.)

Unanswered Questions.—Correspondents whose queries remain unanswered will find the reason in the "special announcement" above.



Photos.]

The Stinkhorn.

The Dingy Inkeap.

Specimens of Fungus photography.

birds often fly in disorder before it.—(to Miss S. DEANE.)

Shooting of Rare Birds.—Yes, all nature-lovers must deplore the persistent shooting of rare birds; but mere writing against the practice can do little good. The B.E.N.A. will very soon start its Collectors' League for the preservation of wild life; and this, it is hoped, may induce the collectors themselves to refrain from killing our rarest birds.—(to W. FORD, Carnforth.)

To Get Rid of Rats.—In a dwelling-house where the peculiarities of the rats' runs forbid the use of ferrets, poison is not to be recommended, because a dead rat under the floor is often a very expensive matter. Traps are effective only to a certain extent. The best thing is a good cat. Get a kitten, whose parent is a famous ratter—you can always hear of such after a little inquiry—and let her have the run of the rat-infested portions of the house at night. It is not the actual number of rats which she kills that clears the premises; but she is always sniffing about the rats' holes, and these wily rodents have a rooted objection to the scent of cats. It generally means sudden deaths in their family; so they go elsewhere. The cat should be well fed every morning.—(to J. GAW, Heathfield.)

The Garden.

Garden Stocks.

A good show of blooms may be maintained for nine months each year.

GARDEN stocks are almost entirely of German creation. Three species have been used as breeders, viz.: *Matthiola incana* which used to grow wild in the Isle of Wight, and is still a weed in some parts of Europe, is the progenitor of the Queen and Brompton stocks; *M. annua*, a near ally, or, according to some authorities, only a variety of *M. incana*, is the parent of the Ten-week Stock; and *M. sinuata*, a native of the Mediterranean region, from which the large flowering, intermediate, and German stocks proper have been obtained.

In the breeding of these plants the German cultivators exercise much care and skill, one grower alone treating annually some 250,000 plants in pots for a supply of seeds. It is almost a secret art that enables them to secure seeds which will yield a fair percentage of any particular variety, the best double flowered varieties being particularly difficult to keep to character. We must not overlook the East Lothian Stock which represents a fine Scotch strain, largely grown for summer effect and also a good greenhouse plant when grown in pots to flower in spring.

It is always desirable to sow the seeds of stocks intended for summer bedding not later than the middle of March, and they are most satisfactory when raised in pans or shallow boxes in gentle heat, transplanting them early into other boxes and finally into the bed or border where they are to flower.

Like all garden plants of the cabbage order (*Cruciferae*) stocks require rich light soil. The best we have ever seen were liberally treated with night soil. A dressing with guano or Clay's Fertiliser a few weeks before the flowers are due helps the plants considerably.

They enjoy moisture. With a little management, it is possible to have stocks in flower for about nine months in the year by using the autumn sown intermediate for an early spring supply; the Ten Week for the summer display, and the East Lothian for late summer.

In raising them under glass, it is very necessary to bear in mind that stocks are hardy plants and that coddling is certain to spoil them.

W. W.

Work for the Week.

Winter Operations.

MIDWINTER is a trying time for plants that are under glass. Those that are at rest are not affected by the trying conditions of defective light, artificial heat, and imperfect ventilation but plants that are in more or less active growth can only be prevented from falling into bad health by constant care and attention. Labour devoted to turning over all growing plants is therefore profitably spent.

Such plants as bedding geraniums, heliotropes, pelargoniums, cinerarias and succulents are benefitted by the removal of dead leaves and stems, the loosening of the soil on the surface and turning the plants half round. A batch of tuberous

When the ground is hard, manure may be wheeled on to beds and borders ready for digging in later on.

Kitchen garden work of the same nature may be got on with. Peasticks may be dressed and any trees that have been marked for felling should be tackled whilst the ground is too hard for other work. Frosty weather also affords a convenient opportunity for thinning with saw and chopper. Weedy undergrowth, such as brambles and gorse, may be got rid of by cutting it down and burning it.

A supply of logs for the greenhouse furnace and fires in the house may be got from operations in the spinney and among old orchard trees. This kind of work is not only healthy and enjoyable, but it also turns to useful account material which too often is wasted. It is worth while to inspect all the trees and get rid of all the cripples and worthless.

Orchids.

Orchids will require to be kept in check as much as possible for the next six weeks or so by maintaining a comparatively low temperature in the houses and supplying no more water at the roots than is necessary to prevent the bulbs from shrivelling.

Calanthes that have bloomed must be kept dry, notwithstanding their efforts to start into new growth.

Dendrobiums of the *nobile* and *wardianum* type will be swelling their flower buds and should be helped with a little extra moisture at the root and a warm temperature.

Generally, however, the orchid houses in December and January should be kept at rest. All orchids enjoy a season of rest; even *odontoglossums* and *masdevallias*, which are naturally always in a state of moisture and growth are

safer in our plant-houses when they are encouraged to keep quiet for a few weeks in winter.

Preparations for a general repotting in spring may be made now. The condition of the peat heap should be seen to and a fresh supply ordered if that in stock is not in good order. Peat that has stood in a heap outside for twelve months is too rotten to be used for orchids.

Clematis.

The clematis is one of the most decorative of plants when forced. At the spring shows in London, market growers provide beautiful displays of plants grown in 5 inch pots, the stems trained loosely to single sticks about 2 feet high and they

(Continued on page 106.)

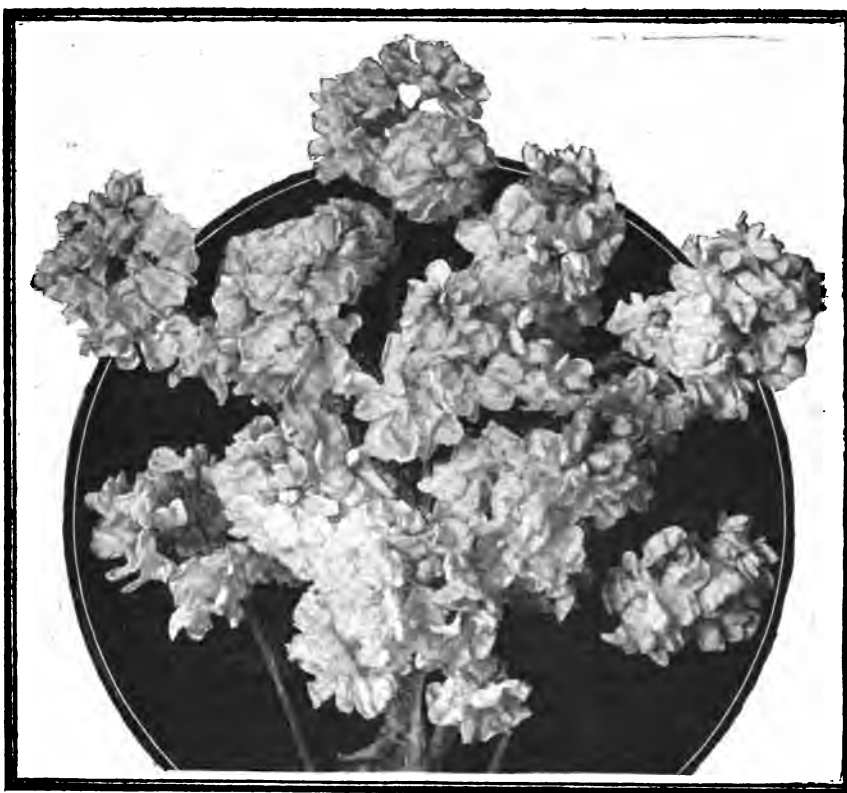


Photo.]

White Stocks.

[W. J. Vasey.

Garden stocks, of which there are over twenty named sections, are almost entirely of German creation.

begonias may be started in gentle heat, and a few of the resting fuchsias brought from their resting quarters to a place where they will start into growth and afford cuttings in a few weeks.

Cannas also may be started by shaking them out of the old soil and repotting the strongest crowns in rather small pots of good soil before plunging them in bottom heat to start them into growth. They will be useful in the conservatory in April.

Should the weather be cold, protection will be required for tea roses and other tender plants outside. A covering of loose bracken serves to keep a lot of frost out, and what is more important, it prevents the bursts of sunshine from doing harm by quickly thawing the frozen shoots.

THE GARDEN. Work for the Week.

(Continued from page 105.)

are clothed from top to bottom with flowers and leaves.

These plants are about a year old when they are placed in a greenhouse or frame in January and kept moderately warm, say a minimum temperature of about 50 deg. They are allowed all the sunlight possible and well ventilated in all suitable weather. By the middle of April they are in full flower, and the blooms last for three weeks or a month.

After the flowers have faded, the plants are placed outside on a cinder bed, and later on they are plunged in the cinders, fed with liquid manure all summer, to be used again the following winter. Plants for this treatment may be purchased now for about 1s. each.

Holly Flowers.

CHRISTMAS without holly would seem miserably severe. The red glow of the "frosty" fire is appropriately accompanied by the brilliant scarlet clusters of berries. Yet how few people, apart from botanists, give a thought to the fact that these cheering trifles are the products of spring and summer—that, indeed, they are the successors



From a Drawing by James Scott.

White Flowers of Holly, enlarged.

of pretty little white fragrant flowers? It is surprising that even a well-educated person will sometimes say, "I didn't know that holly had flowers!" Here I portray a few on an enlarged scale, sketched direct from Nature through a lens. While the normal number of petals is four, it will frequently be found that some of the blossoms possess five. Two partly-opened and two fully-expanded holly flowers are depicted in the drawing, with their male features—the outstanding anthers—prominently displayed. Each of the flowers in actuality could be well accommodated within a circle a quarter of an inch in diameter.

Although, normally, holly trees produce distinct male and female flowers on separate trees, it is a frequent possibility to find flowers combining both sexes, and this fact, added to its trait of forming four and five petalled flowers, show that the trees are in a transitory condition, botanically considered. Christmas ought not to be connected with insects, yet a far scantier supply of holly would gladden us were not the insects of the spring to intervene in the fertilising process.

JAMES SCOTT.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

PIPISTRELLE BAT flying in Richmond Park at mid-day on November 27th.—(W. A. Todd.)

SWALLOWS, etc., on December 6th at Torquay, Devon (F. Price): one swallow and two sand-martins seen daily from November 25th to December 11th at Hawkestone, Havant, Hants.—(H. Beeston.)

OSPREY seen near Lymington, Hants: it seemed very tired, being put up several times, from a distance of less than 25 yards [by two good sportsmen, who did not shoot it.—Ed.]—(Godfrey R. Chambers.)

ROUGH-LEGGED BUZZARD seen near Wells, Norfolk, December 11th.—(E. K. R.)

CRESTED DOVE, shot in the Tynehead district of Scotland, set up by Mr. W. Hall, taxidermist, Wooler. [This was no doubt an escaped bird.—Ed.]

WAXWING AND BUZZARD (*Buteo vulgaris*) shot near Wooler, Northumberland, set up by Mr. W. Hall, Wooler.

FORKED-TAILED PETREL picked up December 4th on the Solway Shore.—(W. R.)

GREAT BLUE OR PACIFIC HERON.—"One was shot at Holbeach, Lincs., about a year ago and the skin is in my possession."—(L. M. Curtis, Holbeach.)

ROOKS back at their nests at Chewton Mendip, Somerset, on December 3rd.—(B. B. Gough.)

SPARROW-HAWKS AND HERONS much more numerous this year than previously at Duntrune, near Dundee, N.B.—(R. R. Ovenstone.)

LANDRAIL, as in so many other countries, has been much rarer than usual in Staffordshire.—(P. C. D.)

BRAMLINGS AND JAYS on Putney Heath on December 9th.—(W. A. Todd.)

BLACKBIRDS singing near Cardiff on December 2nd.—(W. F. Bird.)

Marked Birds.

COOT with one white wing and mottled back near Horsham. It appears to have no mate and the other coots have little to do with it.—(A. G. G. Thompson.) BLACKBIRD with one wing pure white shot recently at Tunstall, near Sunderland (A. E. M.); with white feathers in left wing on November 17th at Shrewsbury.—(J. Corbet.) JACKDAW, not blackbird, as previously printed, with head and primary wing at Cricklewood.—(L. F. Taylor.) ROOK, pied specimen on November 12th at Shrewsbury (J. Corbet); with wavy white marks in each wing, seen at St. Bees, Cumberland, for the last three or four years.—(R. B. Brown.) WREN, with pale grey head, on Dec. 9th, Shrewsbury.—(J. Corbet.)

INSECTS.
SMALL TORTOISESHELL BUTTERFLIES flying on December 7th and 9th, at Taff's Well, near Cardiff.—(W. F. Bird.) PAINTED LADY BUTTERFLY observed at Neyland, Pembrokeshire, on December 7th.—(J. P. Bises.) WASPS' nest in full activity December 4th, at Faringdon, Berks.—(W. Floyd.)

LATE FLOWERS and Fruit.
These continued to be freely reported up to December 7th. On that day no fewer than 23 wild flowers were found in bloom near North Walsham, in Norfolk, by Miss Naomi Bent; and on the same day ripe raspberries were gathered—the canes bearing flowers also—at Newnham, Cambridge, by Mrs. F. J. Brett; and on Dec. 4th, at Bromley, Kent, by Mr. E. A. Gurney-Smith; marsh marigold in flower on the Colne, Nov. 26th.—(L. B. Luget.)

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

Special Advantage for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches, 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Motto.—What seems to be a valid objection to the suggested motto—"One touch of nature makes the whole world kin"—is brought forward by Mr. C. E. Clark, Hammersmith. This line occurs in Shakespeare's "Troilus and Cressida" and the whole sentence runs:—

"One touch of nature makes the whole world kin,

That all with one consent praise new born gawds,

Though they are made and moulded of things past,

And give to dust that is a little gilt,
More laud than gilt o'er-dusted."

As this habit of running after worthless "novelties" is not the touch of nature which the B.E.N.A. proposes to exemplify, I am afraid the motto must go; and, as among the others sent in, there is none which seems pre-eminently good, we will still await suggestions.

News from the Branches.—Will new members or intending members residing in any of the places mentioned below communicate with the hon. secretary at the address given in each case?

LONDON, S.E.—This has, by agreement between the two secretaries, been divided into two districts, as follows:—

Of the *Dulwich District*, including Camberwell, Dulwich, East Dulwich, Norwood, South Norwood, West Norwood, Peckham, Rotherhithe, and Walworth, Mr. John Acutt, 114, Upland Road, East Dulwich, is hon. secretary.

Of the *Catford District*, including Anerley, Sydenham, Forest Hill, Catford, Lee, Lewisham, New Cross, Blackheath, Deptford and Greenwich, Mr. G. H. A. Snow, 153, Davenport Road, Catford, is hon. secretary.

CHATHAM DISTRICT.—Second meeting will be held on Wednesday, January 2nd, at Plew's Restaurant, High Street, New Brompton, at 7.30 p.m., when a paper will be read on "Botany." At the first meeting, arrangements were made for a programme of local rambles, the establishment of a working fund, etc. The hon. secretary is Mr. Benj. J. Williams, Millstrood Villa, Imperial Road, Gillingham.

GLASGOW DISTRICT.—A successful first meeting of this branch was held on November 23rd, when rules were drawn up, officers elected, and a general programme arranged, including the establishment of funds by an annual subscription of 2s. The second meeting will be held on Friday, December 28th, at 8 p.m. sharp in St. Mungo Halls, corner of South York Street and Govan Street, S.S. All new members and intending members in Glasgow are invited to communicate with Mr. John S. Crawford, 287, Eglinton Street, Glasgow.

LOUGHBOROUGH DISTRICT.—Mr. G. Frisby, of Quorn, is willing to act as Joint Secretary for this district; and will be glad to hear from any member residing in Loughborough itself who will co-operate with him.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 86. VOL. 4.

JANUARY 5, 1907.

1d. WEEKLY.

Ice-Caught Waters.

ICICLES always seem more fully expressive of the hardship of winter than any other form of frost.

The rime that turns the green grass to

down its cold side unfrozen. Thus the base of each icicle grows ever thicker, until all unite in a solid sheet of ice which bars all exit to the spring.

Indeed, it is probably this notion of the imprisonment of the life-giving springs of water which causes the icicles, in spite of their beauty, to seem dreary and forbidding. The banks that in summer smiled with fresh fern fronds clustering in every niche, look barred and padlocked; and the dead chill of a cell seems to hang in the deep hollows when the icicles grow longest and thickest.

Another kind of hanging ice differs from the icicle as widely as snow from hail, being formed from the rising spray of falling water. Particles of spray or mist reach some overhanging branches and there are frozen. Other particles freeze to these, and gradually the mass of snowy crystals grows. And as each inch of downward growth brings it nearer to the flying spray, the growth is almost all below, until bit by bit great sheets of hanging snow are formed.

At first sight it seems curious that

hanging from an ice-bound spring; and at other times, in the lightest and most feathery forms. The difference results from the tendency of ice to unite so closely as to become solid if it is moist, but to assume the shape of feathery crystals if it is dry.



Photo.] **The Frozen Spring.** [J. T. Newman.

silver and the bare brown hedges to dainty filigree seem too light and feathery to suggest a season of dreary suffering. The frosted fern fronds and palms on our window-panes frame the most wintry outlook with beauty suggestive of dells in fairyland; and you cannot shudder while you admire—at least not much.

The frozen high road hard as iron, rings briskly under your quickened tread, and a glassy expanse of ice-bound water makes one think of merry skating parties.

Most aspects, indeed, of frost in the country are not only beautiful in themselves, but suggestive of good times of youth and health.

But the icicle, whether it is merely the two-inch spine that drips outside the window-frame or the great bundles of rods and staves of ice that hang from over-arching rock or bank where the springs have been imprisoned, always seems to represent the sad side of winter—the aged, ragged, and bearded season of cold discontent.

Yet icicles are often beautiful: and it is wonderful to see how drop by drop each little outlet of the freezing spring has fed its lengthening icicle, until this grows so long that no drop succeeds in sliding

water should freeze in so many different shapes, sometimes solid—as when it forms a layer of ice upon a pond or an icicle



Photo] **Large Icicles.** [W. Young.

The commonest form of this phenomenon is to be seen in the case of snow, which, when it is thawing and is therefore moist, can be squeezed into a lump of transparent ice, but, while the frosty air keeps it dry, remains in the shape of feathery crystals, which cannot be squeezed even into the shape of a snowball. This faculty of moistened ice to “bind”—as in the case of two slabs of ice which readily unite and become one if wetted, but remain separate if dry—has been the subject of much learned discussion, without any very decided result beyond causing the process to be scientifically described as “regelation.”

The three excellent photographs which accompany this article show the various forms which the frozen water takes at a spring.



Photo.] **The Spring in Winter.** [W. J. Young.

Country-Side Notes.

Warham, Norfolk.

To the true lover of Nature, wild flowers have a charm which no garden can equal.

AFTER the first fall of snow overnight all the mammals of the neighbourhood, except the sleepy few who go to bed for the winter, are obliged to inform the world exactly where they have been and what they have been doing. Walking round the ring fence of your garden you come upon hares' tracks converging to a point in the wire netting; and there, lo! is a hole just large enough for hares to slip through into the shrubbery. That accounts for the condition of the carnations, shaved level as if horse-clippers had been used. Along by the base of the wall runs a regular high road of rats towards the fowl-yard; and you notice, with a view to the cunning location of traps, that whenever a rat comes to a fruit-tree which stands away from the wall a few inches at the base, he always goes behind it.

If I were asked to name off hand some characteristic which distinguishes "vermin" from other animals, I should say it was this mean and underhand method of progression. They are all alike—fox, otter, stoat, weasel, rat, mouse; place an obstacle in their path, and they will all prefer to creep under it with difficulty rather than overleap it with ease. The wily gamekeeper plays with great success upon this foible where the stoat is concerned, and at the end of a bridge-plank over a stream, or other suitable place where animal traffic is constricted as to the neck of a bottle, he places a long, narrow box, with both ends knocked out and a trap in the middle. A hare comes along—and the hare is fool enough to go straight into any trap that you put in his way—but give him the choice and the natural magnanimity of the fool leads him to leap over the box, instead of creeping through it. After him comes the stoat, red-hot upon his scent; and though the vermin's nose ought to tell him quite plainly that the hare did not go under the box, he cannot resist the temptation to be underhanded in his methods, so he hurries into one end of the box—click goes the trap, and he never comes out of the other.

When a stoat is hunting down a hedge-row he makes little excursions, now into the field in quest of roosting ground-birds, now through the hedge, on the chance of hare, hedge-bird, or rat; but when the track keeps straight on the keeper knows that the vermin was going somewhere with a definite object. Presently it turns aside up the hedge-bank and into the hedge. The keeper's eye follows it, and sees that it makes a broad smudge through the snow-crests on the bank. This tells the whole story. The stoat kept a straight line down the hedge, because it was going home; and it was going home because its hunt had been successful. You could not tell this so long as it galloped over the smooth snow, with head upraised, carrying its prey in its mouth;

but, in climbing the bank, its load dragged in the snow, making the smudge that caught the keeper's eye. With so plain a clue, the stoat's lair is easily located hard by; and very soon there will be one family of stoats the less to harry the game thereabouts. Thus it is that a good fall of snow in the evening, overlaying all traces of the day's traffic of beast and bird along hedgerow and covert-side, helps the gamekeeper more than a week of watching.

Cuttings from Bedfordshire papers have been sent to me showing that at a recent meeting the Chamber of Agriculture of that county unanimously passed a resolution that every Parish Council should be requested to establish a Sparrow Club, the mover of the resolution suggesting that for purposes of destruction starlings, jackdaws, woodpigeons, blackbirds, skylarks, rooks, chaffinches, and greenfinches should be classed with the sparrows, for which threepence a dozen is to be given, and a penny a dozen for eggs and young birds.

The worst part of the matter, to my mind, is that children—for such prices will only appeal to children—will be directly encouraged in habits of killing, and that in their irresponsible hands the slaughter will be by no means confined to the kinds of birds named. As one of the supporters of the measure said, speaking from experience of a sparrow club in his own parish, which had paid £8 for 5,000 birds and 5,000 eggs and young:—"If other birds got into the nets the boys did not let them get away." This shows, I think, that the working of sparrow clubs by the aid of children must have a demoralising effect upon the children.

Apart from this, we must admit that the farmers suffer rather seriously from the depredations of all the birds named at certain seasons, and that they have the right to protect their crops by all reasonable means. That they have no desire to be indiscriminate slaughterers of birds is shown by the fact that they do not include the thrush with the blackbird in the list of condemned birds. They recognise that the thrush pays for the fruit which he sometimes steals by the number of snails which he kills; whereas the blackbird practically lives upon fruit during the season, and cannot be scared away from it. By observing this difference between the two songsters, the farmers show that they have endeavoured to be just.

But they overlook two important points. The first is that the great increase of bird-life which they regard as a new burden on the land is not, as is often supposed, the result of Bird Protection or Gun Licence Acts, and therefore likely to continue. The increase has been just as great and is just as burdensome to the cultivator in Continental countries, where no Bird Protection or Gun Licence Acts exist. The real cause of the increase has been

the long series of mild winters and favourable breeding seasons. Not for ten years have the birds been killed off to any appreciable extent by prolonged frost and snow. So soon as this happens the numbers of the birds will go back to the level of ten years ago, when the rook and the starling were not too numerous and were regarded as the farmer's friends. Thereupon the proposal to include their destruction in the permanent programme of Sparrow Clubs in every parish goes far beyond the needs of the case; since during this very winter—perhaps even before these lines are printed—the birds may be reduced by starvation within proper limits.

The second mistake which the farmers make lies in including the eggs and young of such birds as jackdaw, woodpigeon, skylark, and rook among those which should be destroyed. The immense flocks of these birds which do so much damage between October and April are not bred in this country. For many hours daily for several days endless processions of foreign rooks, jackdaws, starlings, and skylarks pass inland in autumn over our east coast; and now and then the multitudes of incoming woodpigeons fill the sky. These are the birds that devastate newly-sown fields or clear wide acres of clover; and to destroy the eggs and young of our comparatively few home-breeding birds will hardly touch the winter evil, while it will rob us of a number of birds at other seasons when they do good work for the land.

If the farmers would take the advice of competent naturalists on these points, if they would bear in mind the demoralising effect upon children of bribing them to take the lives of helpless things; and if they would also insist upon real protection being given in every parish to such useful birds as kestrels, barn owls, woodpeckers, night-jars, etc., we might find all serious causes of disagreement between the cultivator and the bird-lover happily removed.

The Rev. W. Lacon Tonge sends me a picturesque account of the way in which the wild sea gulls at Blackpool crowd up to be fed by visitors in autumn. In London, of course, the same thing now occurs; and it would be interesting to know at how many other places in Britain the gulls are fed in this way. There is no reason why the practice should not come into vogue at every seaside place, if anyone would take the trouble to establish confidential relations with the birds. They are extremely keen-sighted, and in spite of their natural shyness would soon learn to attend upon anyone who might throw scraps of food from pier or sea-wall. After that they would need no teaching to come crowding up to anyone who had food to throw; and I can assure those who have not tried it that distributing a chunk of bread in small pieces to gulls on the wing is the best penny-worth of amusement I know.

In our "Notes, Queries, and Correspondence" the old question whether insects, especially bees, have a sense of colour has been raised again. Of course, to most people the question seems to have been definitely answered in the affirmative by the experiments of Lord Avebury and others. But the answer is by no means complete; for to prove that insects can distinguish between different colours and prefer some to others is by no means the same thing as proving that they have a sense of colour. The truth may be—and I think is—that insects' eyes are very sensitive to the disposition of light, and distinguish colours only by the effect of light upon them, but cannot distinguish colours as such.

To make the difference plain; any creature with a sense of colour would always distinguish between white, pink, and blue; but there are many reasons for supposing that to the eyes of insects there are certain tones of pink and blue which are indistinguishable from each other and from white. The common milkwort seems a good case in point, for it has white, blue, and pink varieties which are almost equally common and are often found growing side by side. The wild hyacinth—the bluebell of our spring woods—is ordinarily blue, but a white variety often grows mixed with the blue, and occasionally it varies towards pink.

Although there may not be many wild flowers which thus use pink, white, and blue indifferently, it is almost a rule that flowers which are ordinarily pink or blue have fairly common white varieties, thus showing that from the point of view of the flowers' interests, it evidently matters little which of these colours they display. Therefore we may assume that insects do not distinguish between these colours as such; but that the multitudinous lenses of which their eyes are composed regard them as equal distributors of light. And it is no small confirmation of this opinion that the lens of a camera takes the same view, since all three come out white in a photographic print. Therefore I think that we must conclude that, although insects can distinguish between most colours the probability is that they have no colour sense, as we have, the lenses of their eyes probably lacking a certain colour-screen which enables us to give to each colour a proper value of its own.

Writing on December 11th a Havant reader, Mr. H. Beeston, asked for an explanation of the prolonged and untimely stay of two sand martins and a swallow at that place from November 25th to the time of writing, when they had become very feeble, and seemed to have no chance of saving their lives. He cannot understand how this fits in with any theory of migration. The explanation is, I should say, that during their stay no wind from the right quarter, presumably the north-east, blew with sufficient strength or persistence to reawake the instinct of migration. Before the end of November the migratory spirit of a swallow would under ordinary conditions be at rest; and how should a swallow know that the wind had brought him in the wrong direction? England is, of course, no place for swal-

lows so late in the year, when almost every wind is cold and insects are very scarce. Thus it may very well have happened that these luckless swallow birds were gradually starved while the winds were blowing from quarters which their instinct rightly bids them—in October—not to obey. On the other hand, it is not impossible that at the very last the right wind blew and carried them in a few hours to sunnier scenes.

I do not mean to imply that swallows or any other birds understand the points of the compass and deliberately wait for a favourable wind; but merely that they have the same instructive knowledge as other creatures of a north-east wind. Although it may bring no appreciable chill, the entomologist knows that he may as well stay at home when the north-east wind blows, because scarcely an insect of any kind will stir abroad. The angler similarly knows that his labour would be wasted, because the fish will stubbornly refuse to feed. We, human beings, have made ourselves comparatively independent of the weather; yet in many diseases it is said that human life ebbs lowest when the north-east wind is blowing, and a gouty patient has little need of weather-cocks. Therefore it is a very simple thing to believe that birds, to whose ancestors the direction of the wind in autumn has always been a question of life and death, should have acquired a delicate sense in the matter.

The foregoing are by no means the only December records of swallow birds on the south coast this year; while in our issue of December 22nd was published the report that a nightingale had been seen in Oxfordshire in December. But for the fact that the report was sent in by a professional naturalist on the evidence of four persons, of whom two were expert bird-fanciers, a December nightingale would seem too absurd for a moment's consideration. And there is something "worse" to follow this week in the "Nature Record" that several persons besides my informant, heard a cuckoo distinctly in the morning of December 13th near Crawley, in Sussex. Now, the cuckoo's note is very easily imitated and in default of more conclusive evidence we must set down the "cuckoo" heard in December as the voice of that very ancient bird, the practical joker.

But—and there must always be a reservation in one's mind when one dismisses the evidence of an honest witness as "impossible"—I am reminded that in 1905, when February was a remarkably "spring-like" month, February cuckoos were reported and that in 1906, when January was absurdly mild, other apparently credible witnesses recorded January cuckoos. Commenting upon these astonishing reports I said that perhaps the following December would bring us a December cuckoo—and it has come, the said December having been so absurdly mild during the first two weeks as to bring a number of spring and summer plants into bloom, besides producing ripe strawberries, raspberries, and blackberries.

Now this unseasonable display of flowers and fruits was the result of continuous winds from the south which had brought to us the climate of the Mediterranean. They had also brought us swallows; and if honest observers say that they also brought the nightingale and the cuckoo, we must recognise that such things are not really impossible. "Impossible" is a word which those who know most least often use; and I think that the general refusal of our naturalists hitherto, to believe that the cuckoo can "possibly" be heard in England before April 8th has been due to their complete ignorance of the simple principle which guides the migration of birds. During the last three winters we have had spells of extraordinarily mild weather synchronising with reports of the appearance of spring birds; and, since the migrations of birds are governed by the wind, why should not the same south winds which bring our spring flowers into bloom also bring the birds of spring to our shores.

The strongest argument against December nightingales or cuckoos—the occasional swallows and blackcaps and chiffchaffs cannot be denied—is that no well-known naturalists bear witness to them; but this objection loses a good deal of its force when one considers how small the proportion of well-known naturalists is to the general nature-loving public. In the case of birds which are less easily distinguished by the inexpert, we should, perhaps, have to await the evidence of naturalists; but the cuckoo's voice is familiar to everyone, and if it is possible for the south winds to bring swallows to our south coast in midwinter, as well as such Mediterranean birds as the wall-creeper, why should they not occasionally bring a cuckoo too?

E. Kay Robinson.

The Suburban Sparrow.

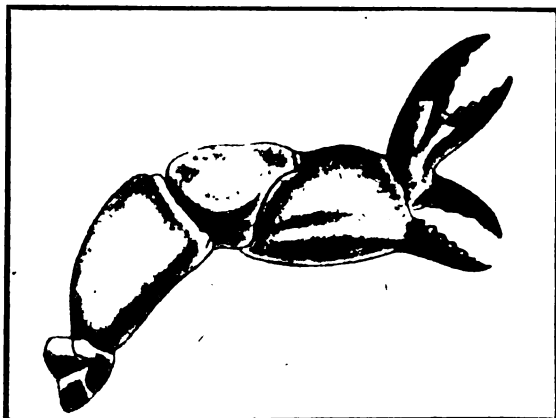
If he's but a common sparrow with a homely khaki coat,
And a halting, hopping habit and a chep, chep chirpy note,
He's a lively little fellow—pre-eminently pert,
Intent on his own interest, both able and alert.
He mayn't warble like a skylark, or twitter like a wren,
But let a rival sparrow come he'll make some music then.
The morning finds him prating to his partner on the eaves,
The evening sees him seeking the seclusion of the leaves.
The robin (yes, your bobbie is a universal pet)
Gets a welcome, and his dinner on the window-sill is set,
While the would-be social sparrow gets a warning and a threat
And has to keep his wits alive to 'scape the guns and net.
I like the saucy birdie with his homely khaki coat,
Admit he is pugnacious and there's nothing in his note.
I trust my sprightly sparrow, my faithful feathered chum,
Will cheer me by his chattering for years and years to come.

CHAS. BUSSAY.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Claw on Claw.—This very peculiar example of a deformed crab's-claw illustrates well the way in which nature sometimes misuses the special advantages which creatures have acquired for their protection. It is the nature of the crab to reproduce pincers which have been lost; and, of course, that which causes the new growth to commence must be the



From a Drawing by T. E. Belcher.

Crab's Curious Claw.

With a secondary double claw sprouting from the base of one of the nippers.

existence of a wound. Occasionally, however, the incitement to new growth will come from a wound or other source of visitation which has not caused the loss of the old claw; and growth once started will not cease until it reaches completeness. It is just as if the vital tissues of the crab had misunderstood the situation that had arisen and taken the wrong measures to deal with it, mistaking the local trouble caused by a small injury for that which would result from the loss of a claw.

Cuckoo's Imitative Eggs.—Some time ago a correspondent argued that the resemblance of the cuckoo's egg to those of the nest in which it is placed is either fancied or accidental. I have had the privilege of seeing some sixteen nests—each containing a cuckoo's egg—of different kinds of birds with their respective clutches of eggs, in every case of which the cuckoo's egg (had it not been for its slightly larger size) could scarcely have been distinguished from those of the intended foster-parents, even such details as the delicate pencilling seen on the eggs of chaffinch, goldfinch, and others being closely imitated.—F. GILLETT CORY, L.R.C.P., Lond., etc., Marn-hull.

Insects at Sea.—I noticed in a recent number that an American butterfly, the monarch, has been seen 500 miles from the nearest land. On September 2nd, 1905, when on a trip to Australia, I caught a fine specimen of the death's head moth (*Acherontia atropa*) in lat. 32/34/- N. and long. 20/52/- W., the nearest land being Maderia, 90 miles off. On the 11th of the same month, I netted the striped hawk moth (*Deilephila livornica*), in lat. 14/1/- N. and long. 25/16/- W., or 70 miles from the isle of Bravo. On the 17th, I caught a small dragonfly on one of the braces, our position then being 5/2/- N. and long. 24/14/- W., Bravo, which was the nearest land, then being 750 miles off. On the 14th I saw, but did not catch, one of the vanessas in lat. 9/53/- N. and long. 26/31/- W., being 430 miles from Bravo, the nearest land. Wishing your valuable paper every success.—GEO. GREIG, Jnr., Cotswold, Pren-ton, Birkenhead.

Owl by Daylight.—At 3.40 p.m., on November 20th, in broad daylight, I was crossing the railway bridge at Bidston, when a large tawny owl perched on a rail in the field not twenty feet from me, raised itself in the air, and swooped on the railway bank, flying away with a small rat or mouse in its talons.—H. P. TONGE, Liverpool. [It is not very unusual to see either tawny owls or barn owls hawking for food before sunset.—ED.]

Bees and Colours.—Your correspondent, Mr. W. F. Price, is apparently under the impression that it is generally recognised that the bee has no sense of colour. Surely this is wrong. Do not the experiments of Lord Avebury and many French scientists go to prove that bees most certainly have a very good sense of colour? If Mr. Price is interested in this subject he should read "Ants, Wasps, and Bees," by Lord Avebury.—O. C. SILVERLOCK, Windermere. [See "Country-Side Notes" in this issue.—ED.]

Birds' Pellets.—A lady correspondent refers in the issue of December 15th to the incident of a blackbird observed ejecting a pellet of indigestible matter. This habit is common to most, if not all, insectivorous and fruit-eating birds. In a state of freedom I have observed it in more than one species and remember last autumn seeing a young robin of the year jerk out a pellet to a considerable distance from him. With birds in captivity such habits cannot go unnoticed, and when keeping chats, warblers, redstarts, nightingales, or wagtails one frequently finds these pellets sticking to the walls of the cage. Thrushes and black-birds also cast up irritating matter in a similar manner. A charming stonechat I at present have casts up pellets as large as a small pea but oval in shape. They consist chiefly of the wing cases and hard portions of a species of water-boatman which are sold dried, and have been employed with considerable success as an ingredient in many foods

of so-called soft-billed birds. The substances that are usually ejected are hairy, fibrous, or exceptionally hard, such as the legs of cockroaches, the wing cases of beetles, parts of the bluebottle fly, little fragments of tough vegetable matter, etc., etc. Many birds feeding on moist or slimy creatures swallow quantities of foreign matter, consequently the ejecting of pellets must serve a useful purpose.—ALLEN SILVER.

Mushroom-eating Rodents.—Between Brighton and Falmer on the Downs the furze mushrooms are frequently partially eaten by some rodent, mouse, rat, or rabbit. I favour the latter, as rabbit burrows and runs are always in the neighbourhood.—W. J. COLLISON, Brighton.

Scentless Violets.—I was interested to see that your correspondent—A. L. Beaumont, Hathersage—had found the *Viola odorata* (or what should have been *odorata*) without any

scent. In Yorkshire, some years ago, in the last days of April, I observed the same thing. On a high bank by the road-side, the scentless blue wood-violets (*V. sylvatica*) were just coming into bloom, and though I had been told that the sweet-scented ones grew there also, I thought it would be too late in the season to find those. Presently, however, I caught sight of the rounded leaves, purple colour and longer, narrower flower of the *Viola odorata*, and eagerly gathered the few I saw, only to find, to my disappointment, that they had no scent.—EDITH L. JESSOP, Bebington, Birkenhead. [Is there any ground for supposing that when the sweet violet blooms unusually late it has no scent?—ED.]

"Photographic Mystery" Explained.—Mr. Ash's photographic mystery, appearing in THE COUNTRY-SIDE of November 24th is, of course, no mystery to any one versed in photography, it being merely a bad case of what is technically known as frilling. In the case of the white tulip, the gelatine is protected by the heavy deposition of silver in this part and the reticulation of the gelatine is due to unequal expansion, partly caused by the different densities of silver deposition throughout the film.—A. C. POOLE, The Mall, Ealing.

A Bird that Might be Saved.—The different kinds of apteryx are the only existent birds that have marrow in their leg bones. They procure their food by thrusting the beak into the ground. The nasal organs being situated at the extreme end of the beak it is probable that the bird can smell food which it touches. In confinement you constantly see it pass its beak over a worm and not take until it touches it. It is an enormous feeder, eating a pint of worms in one night. It defends itself by kicking upwards whilst uttering a snorting noise, the claws of the feet, being very sharp, inflict great pain. Its call, "ki-i-wi," is strong and shrill, and differs in the male and female. Being nocturnal it is very difficult to photograph, being quick in movement and struggling to get out of the strong light. Several different kinds of apteryx are named after well-known men, as *Apteryx haastii* after Sir Joseph Haast, *Apteryx owenii* from Professor Owen, and the subject of the illustration, *Apteryx mantellii* after the great traveller, Mantel. All these are fast becoming extinct



Photo.]

[W. Moore.

Apteryx or Kiwi.

Flightless New Zealand bird, in danger of extinction.

and unless some enthusiast establishes a home for them in Europe, which, by the bye, is very suitable in climate, a live apteryx will before long be a thing of the past.—F. DOGGETT.

Mercy in Sport.—Is there any good reason why wounded birds should not be killed in the way that a poulterer kills fowls, by "pulling the neck"? It is so quickly and easily done once the knack is learnt and is so perfectly clean, there is no question of blood flying about. I have killed both fowls and rabbits by this method and would not think of using any other. When I first kept them for the table I used various more or less barbarous ways and means of giving the "happy despatch," until one day I learnt the trick of this much superior way.—G. H. LEWIN, Northampton.

Great Flight of Starlings?—On the morning of December 6th I saw flying over the house for about twenty minutes several millions of birds. They were flying due north exactly over the house in a very long string from the direction of France. They looked rather like starlings. At about a quarter to three that afternoon I saw another flight only lasting about two or three minutes (the first lot started about five minutes to eight and ended about a quarter past). I should like to know what they were, and why they flew north in such a long string? Did anyone see the same thing?—H. W. HECKSTALL-SMITH, Winnfield, Southampton.

Killing Rare Birds.—The recent slaughter of an osprey, buzzard, and great blue heron, etc., etc., shows how hopeless it is to secure the protection of these rare and beautiful birds in this country. For my part I look forward to this paper week by week and at the same time dread to turn to the column of "Records" for the reason that one never knows what "record" may be established in bird slaughter. It seems incredible that the British nation should tolerate such a state of affairs.—"Athene Noctua."

Do Hedgehogs Steal Milk?—In answer to W. F. Johnson I can assure him that this is not impossible. People in vans—travelling the country lanes—early and late "see very strange things betimes," as Weldon, a seller of winkles, told me this year on Trinity Monday, at a village club fête not far from this. He was telling me of things in nature, he had seen from time to time and amongst others how, about 4 o'clock one morning in summer he saw a cow lying down in a meadow, apparently much enjoying the relief given her by the sucking of a hedgehog which was against her, but which (as they can) so arranged his prickles as not to touch the udder. I was rather sceptical, but he assured me of its absolute truth and said that he had seen the same thing on another occasion. I know that young hedgehogs, brought in by our gamekeeper from a rabbit earth, used to unroll themselves immediately I put a saucer of milk down and go to it at once.—C. H. L. PENRUDDOCKE, Dinton, Salisbury.

"Latin" Names of Birds.—Regarding the discussion of such names as *Perdix perdix*, etc., there is no "system" of naming the typical species with the name of the genus. In all cases the rules of nomenclature are that the oldest specific name must stand. In the case of *Perdix perdix*, the first name given to this bird was that of Linnæus, *Tetrao perdix*. But Linnæus wrongly placed the partridge in the genus *Tetrao*, so that it became necessary, after placing it in its correct genus, *Perdix*, to call it *Perdix perdix*. Linnæus' name was given in 1766; Latham's name of *Perdix cinerea* was not given until 1790, so cannot possibly be used. Similar reasons will account

for all cases of the same kind, in which the generic and specific names are the same. Only by strict adherence to the rule of priority for specific names can confusion be avoided, and it is neglect of this rule by the older writers which is causing so much trouble nowadays.—W. F. H. ROSENBERG, F.Z.S., Haverstock Hill. [See "Country-Side Notes" last week.]

Curious Effect of Hoar Frost.—At the first glance the reader might take this picture to represent a branch of cross-leaved heather with its short stiff leaves, but such is not the case. It shows a branch of the "Snowball tree" covered with hoar frost, a beautiful object in

cockroach is quite a household pest in the poorer quarters, its chief characteristic being the readiness with which it can use its wings. I also enclose a white cockroach caught in this neighbourhood.—EPH, Attercliffe. [The small cockroach is known as the German cockroach, *Phyllodromia germanica*, which is supposed to have been brought over from the Crimea after the war. It is very abundant in London bakeries, etc. The white cockroach was only an immature common cockroach, *Blatta* or *Periplaneta orientalis*, which had just changed its skin. Then they are always very pale, almost white.—ED.]

The Robins' Bath.—I find robins more persistent bathers than any other birds. In the summer they would like to monopolise the bath entirely, and one robin here still takes a cold bath regularly last thing before going to roost. Last Sunday (December 9th) it came as usual about 4 p.m., but flew away without going into the bath. I then found that the water had frozen over since it was filled in the morning. As soon as this was made all right the bird returned and enjoyed a thoroughly good splash. On another occasion I noticed a similar hesitation and found the cause of offence to be dead leaves.—(Miss) M. O. KITCHING. [The robin takes so late that those who do not put out a bath for the birds seldom witness the operation.—ED.]

How Parrots Yawn.—With regard to birds sneezing, I have seen a green parrot apparently yawn, which it did by lifting the upper mandible. Can other birds do this?—A. W. B. BARKER, Brussels. [No; it is a peculiarity of the parrot tribe that the front of this skull is hinged across so that the upper mandible can be raised. Sneezing is common in birds.—ED.]

Water-finding.—Referring to the article in THE COUNTRY-SIDE (which I always take, and have done from the first) on water-finding, I should like to say a word or two as to its use and its reality. I have seen its value proved more than once. I once saw a friend who had the gift—and it is a gift—take a willow wand. He always used a willow wand, but any green branch will do equally well—hazel, cherry, hawthorn, etc. He walked about but no twisting occurred until at last he came to a certain spot in my garden, and then the wand began to twirl and twist. We dug and found water a few feet below the surface. I have seen similar cases and every one proved true—not once failing—with the gift, as in this fashion. I might have said I tried over and over again but I had not the gift nor the electricity in my body. It is the electricity which makes the difference. Some bodies have this (sufficient) electricity, which in some way has the power to have a communication with the water or the electricity which the underlying water gives to the earth; this is my idea. You may rest assured that if the body does not contain the necessary electricity, you cannot act. It is foolish for people to question the truth of this peculiar and, as I hold, useful phenomenon.—S. YEATES, West View, Cowfold. [Is it not rather against the theory of electricity that the tests recorded in our article were successful when the two ends of the forked wand were inserted in glass bottles? Would this not insulate the wand?—ED.]

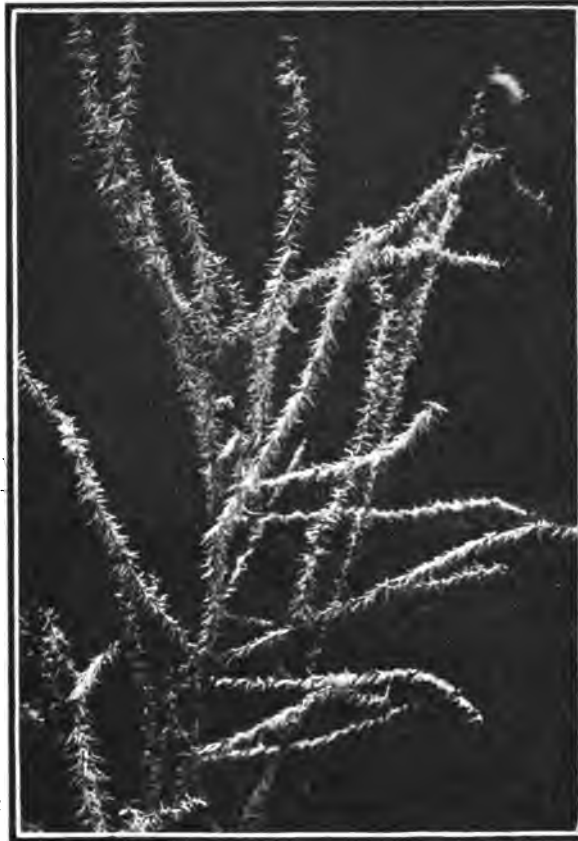


Photo.]

Freaks of Frost.

[J. C. Varty-Smiths]

A branch of snowball bush which hoar-frost has converted into the semblance of a beehive.

winter when the dew is deposited and freezes from the cold. The reason that crystals arrange themselves in groups is not clearly understood, but it is supposed that magnetism aids the disposition of particles of water in the process of crystallization. There is a slight difference between the crystals of hoar frost and snow due to the various degrees of temperature in their formation, or by the different effects caused by the magnetism of the earth and the electricity of the air. The minute drops of dew suspended in the air are free to arrange themselves in crystalline groups upon plants without the interference of other causes.—J. C. VARTY-SMITH, Penrith.

Cockroach Questions.—A few weeks ago I was on the point of retiring for the night when my attention was drawn to a corner of the living room, by the well-known sound of the fly when in trouble. My thoughts naturally turned to spiders, but what was my surprise to find an insect, about half the size of a cockroach but yet very much like it. I could not at first see the fly, but after catching the insect I found the fly in a crevice with half its head eaten away. Whilst getting the fly another of the curious cockroaches came out, evidently its mate by the shape of the body, so I bottled both of them, with the house-fly which I forwarded. I found out by enquiry that this small

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, JANUARY 5, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 8s. 8d.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them.

All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager,

THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Tree Lore.

By MAUD E. SARGENT.

IN every land, north, south, east, and west, a host of quaint superstitions have been associated with trees, from the days when the ancient Greeks and Romans fancied that Dryads haunted the forest shades, and our own Druids offered sacrifices to the oak, the ash, and many other trees.

Of these the oak was the most important; indeed, every nation in whose land this fine tree is indigenous, seems to have attributed wonderful virtues to it. The Romans held it sacred to Jupiter, the Scandinavians to Thor, the god of war and thunder, to whom Thursday owes its name.

Here in Ireland we have countless famous oaks, some regarded as "fairy trees"; an idea which is also found in England and Wales—there is a "Fairy Oak" at Wrexham—and in Germany, where the elves and fays are represented as hiding under the spreading roots of this tree.

Kildare means "the Church of the Oak," and the number of places in Ireland in which "Dare," or "Darragh" forms part of the name, including "Derry," testify to the estimation in which this King of the Forest was formerly held.

In Northern lands there were "holy oaks," to which the people paid a respect that was half Christian, half pagan. At Minden on Easter Sunday young men and women took hands, and danced with shouts of joy round an ancient oak tree, and at Wormeln there is a holy oak, to which the inhabitants of this German village make a solemn procession annually. In the South of Ireland the leaves and bark are still prized as a styptic, a very old belief.

In Westphalia and some other parts of Germany there is a tradition that the Wandering Jew can only rest where he finds two oak trees growing in the form of a cross. In the West of England, as in the South of Ireland, the tiny holes that one often sees in the bark of oaks and other trees are said to be made by the fairies, who haunt the woods. As the emblem of the Stuarts, oak leaves and "oak apples" were till quite recently worn in the West of England on "Oak Apple Day" (May 29th), when boys used to shout "Royal Oak, the Whigs to provoke!" and throw water over those who did not sport the badge.

St. Colman was said to have presided over a celebrated oak at Kenmare, a fragment of which held in the mouth would secure its owner from being hanged. When St. Columba's Oak was blown down no one would dare to touch it, except a tanner, who cured his leather with the bark. He made himself a pair of shoes with this leather, but the first time he put them on he was struck with leprosy, and remained so till the day of his death!

We read of St. Bridget teaching under the oak at Kildare; in fact, there are countless stories of noteworthy personages connected with this tree, which, according to some, was a protection against lightning; others assert it attracts it.

Norman peasants constantly wear a sprig of whitethorn or blackthorn in their caps, alleging that it has wonderful powers, because the Saviour's Crown of Thorns was made of it.

The Cross is said to have been made of a number of plants. According to Bede it was composed of four kinds of wood—cedar, cypress, box, and pine. An old Latin rhyme asserts that—

"Nailed were His feet to cedar, to palm His hands,
Cypress His body bore, title on olive stands."

The gipsies think that the Cross was made of ash-wood, and that the Infant Christ was dressed by the light of a fire of its branches. Others think it was composed solely of oak, or of cedar. In Scotland it is thought that the "bour tree," or elder, was used for the purpose, and has ever since been stunted and crooked in growth—

"Bour-tree, bour-tree, crooked rung,
Never straight, and never strong,
Ever bush, and never tree,
Since our Lord was nailed to thee!"

It is also thought in Scotland that the low growth of the dwarf-birch is due to the fact that the scourge with which our Lord was beaten was made of it. The weeping willow is said by some to have been the tree of which the Cross was made, and ever since its boughs bend downwards, as if weeping for its crime!

There is a notion that the elder is never struck by lightning, but that some dire misfortune will befall those who cut it down for firewood. In olden days, in Germany and Scandinavia, this tree was supposed to be inhabited by a mysterious being, "the Elder-Mother," known in Denmark as "Hyldemor," who avenged any injury done to the tree.

In Saxony and other parts of Germany, till quite recently, when an elder had to be lopped or cut down, the woodcutter knelt before it with folded hands, saying:—

"Lady Elder!
Give me some of thy wood,
Then will I give them some of mine,
When it groweth in the forest!"

It was thought risky to have moveable articles made of its wood, and it was said that when an infant had once been placed in a cradle of elder a mischievous elf never ceased pinching its legs and teasing it till it was taken out.

Both the common ash, and the rowan, or mountain ash, are regarded as mystic trees in almost every land, and nowhere are they more esteemed than in Ireland. Branches of rowan are still hung over the doors on May Eve or Day in many a rural home, and a cross of this wood or of rose-briar is often put under the churn or the cradle, on that eerie occasion, when witches and "the good people" are popularly supposed to be on the look-out to bewitch the butter and steal infants!

Highlanders still carry crosses of rowan, tied with red thread, in their pockets as a protection against witchcraft, and the same custom lingers in Cornwall. In Lancashire a sprig is often hung up at the end of the bed, and there, as in this country, the staff of the old-fashioned churn was frequently made of it. It was planted in Welsh churchyards as yews were in England and Ireland, and in the West of Ireland a piece of this wood is often built into a boat to guard it against shipwreck. This superstition is probably derived from the Danish invaders, who always used some rowan-wood in their ships to protect them against storms raised by the malicious Rán, the wife of the Sea-King, who drew shipwrecked sailors into her net, and was always ready and willing to raise storms to destroy them!

The fairies are also supposed to dwell in pine trees, although these handsome evergreens have been associated with Christian celebrations from a very early time. Our Christmas trees, laden with gifts, are a relic of the old Northern superstition that a Yuletide, when Holda, or Bertha, the patroness of spinners and good housewives, passed through the land, the fir-trees rained down presents upon deserving people.

The hazel is connected with much mystic lore, and it is supposed that not only do the fairies dwell in its shadow, but precious metal as well as water-springs are said to have some odd affinity with it. The use of the divining-rod of hazel is still common in the north of Ireland and Cornwall, as well as on the Continent, the wand being said to bend in the holder's hand when it passes over hidden springs or metal.

In Germany the willow is sometimes said, like the elder, to be the tree on which Judas hanged himself, hence it is supposed to have a special attraction for suicides!

Amateur Photography.

PHOTOGRAPHING FUNGI WHERE THEY GROW.—II.

By J. H. Crabtree, F.R.P.S.

AS fungi are flowerless and leafless, having no chlorophyll to produce the ordinary green tints of other plants, the item of colour need not give much trouble. Some examples, however, such as the Blusher (pinkish), Grisette (light brown), Tricholome (olive brown), Prickly

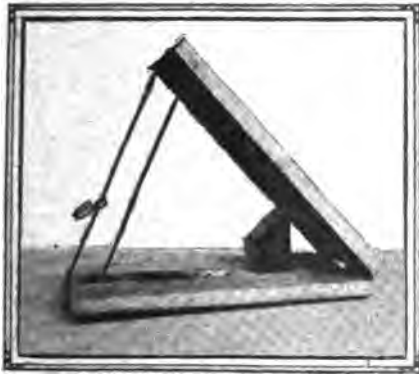


Photo.] [J. H. Crabtree.

A useful Tilting Board.

Cap (bright yellow), and Sulphur Tuft (yellow), are better rendered by the use of a three to five-times screen according to depth of colour; the denser screen being, of course, used with the greater depth of colour in the fungus.

My preference in every case is to use orthochromatic plates, whether using a light-filter or not. There is nothing to lose by adopting this plan; and I am sure that better results have come my way from orthos than from ordinary plates. I have tried both kinds by way of experiment.

All plates should for certain be backed. Buy them ready backed at a farthing each extra. This farthing is a good investment. Or it is a simple matter to back your own plates. Purchase a tube of backing-medium from a dealer—I use halogen—mix a small quantity in a fresh bottle with gum and methylated spirit, adding just so much of these ingredients as will give to the medium the consistency of cream. Paint this over the glass side of the plate with a camel-hair brush. Use the plates when dry. If you cannot conveniently wait until then, put a piece of tissue-paper, exact size, over the backing and insert the plate in the camera. I have often done this when pinched for time.

You will bear in mind that the tripod must be on its "last legs" and these must be very short. A metallic, telescopic tripod is most convenient, provided it be well-made and will stand a fair amount of wear and tear. I have tried several before adopting one with triangular section. This is more expensive than the circular-tube pattern, but these latter collapsed rather too early.

A tilting board is also a *sine quâ non*. I have already described this in the pages of THE COUNTRY-SIDE (May 10th, 1906). This will enable you to get within a few inches of the fungi and focus to a nicety. Take up one or two specimens by the roots and set them by their compeers to show clearly the gills in Agarics, the pores in

Bolets, the branchlets in Clavarias, or the cup-like base in Stinkhorns. Also cut a fungus lengthwise through the centre to show its internal structure. These sections may be photographed separately for teaching or lecturing purposes.

Exposure is of immense import in toadstool photography. Mistakes are usually made in *under*-exposure. With the light much less actinic than in summer, with trees and branches overshadowing, and with dark-coloured soil and earth surrounding the fungi, this mishap is to be guarded against. "Expose for the shadow" is still a good old rule here. I use a rapid plate (H and D 200), and have given exposures as under in October, with very good light to begin with and gradually diminishing to twilight.

2.15 p.m.	5 secs.	4. 0 p.m.	1 mins.
2.30 "	10 "	4.30 "	1½ "
3.10 "	40 "	5. 0 "	2½ "
3.20 "	45 "	5.15 "	6 "

These are actual exposures and the negatives proved to be quite satisfactory when developed with a 10 per cent. pyro-soda developer containing a very small quantity of bromide—about two minims of a ten per cent. solution to each ounce of developer. Be sure to notify the details of all exposures in your note-book.

Profitable Poultry Culture.

By "CHANTICLEER."

Improving the Lobes.

I AM an ardent admirer of a good-quality lobe, in our Mediterranean breeds especially, and am surprised to see the neglect of this important adornment to a well-bred fowl.

In exhibition specimens great attention is paid in such breeds as Minorcas, Leghorns, and Hamburgs by poultry-keepers. The lobes often become soiled or discoloured by neglect or want of condition, which may be remedied by providing shelter for the birds and darkening the run, also by rubbing some cream well over the lobes, and smoothing gently with the fingers, and afterwards drying it off with zinc ointment and starch powder.

The day after it may be bathed off with clean tepid water, and if repeated every other day the lobes will in a short time have a totally different appearance.

Old versus New Breeds.

I am an enthusiastic admirer of our old breeds of poultry such as the Brahmas, Cochins, and Dorking fowls, so closely associated with poultry-keeping half a century ago, and recognising that they are responsible for all our new breeds, they claim my respect; but I vigorously refute the statement so often made that all our present-day breeds are mongrels.

When I gaze at the formidable array of typical poultry penned at our twentieth-century shows, I consider it convincing proof of the advance and energy of enthusiastic poultry-breeders. What a contrast to the poultry shows of fifty years ago, when the number of breeds could be counted on the fingers of one hand!

All credit should be given to such poultry-breeders, for the excellent results of their "crosses" or manufacture have produced the Wyandotte, Orpington, Plymouth Rock, Redcap, and others, which are now bred with as much purity as any of the old breeds of years ago.

When one thinks of the labour and pains by which poultry-fanciers have built up the poultry industries and created breeds of fowls which are as beautiful as they are profitable, I feel it is a subject for congratulation.

Some may argue that these men have spoilt many of the utility qualities of poultry, but I will reply that fancy or distinct breeds have the decided advantage that when crossed their productiveness and vitality return with increased force, and therefore even the utility poultry-keeper has to be thankful to pure or fancy breeds for the benefits he receives in this way.

For my own part, I can honestly state that good fancy stock are invariably the best, being the most useful and certainly the most remunerative, for if we investigate the merits of the common barn-door fowl it will be found they lay considerably less than the cultivated pure-bred useful distinct varieties whose average is seldom less than 180 to 200 eggs per annum, whilst their size is in their favour.

The Griffon Vulture.

We are so accustomed to seeing bald-headed men in positions of honour by right of seniority and intellect, that we seldom realise how much of dignity in aspect a creature loses when its scalp is bare. Here, however, is a good illustration in the insignificance of the Griffon Vulture's skinny head by contrast with the magnificent spread of its pinions. The contrast is suggestive, too, of the creature's life. There is nothing finer in the realm of nature than the vulture when it sails and sweeps aloft on broad and powerful wings; nothing more loathsome and disgusting than the same foul-smelling bird, when it has stooped to earth, and is gorging deep upon the entrails of some putrefying beast. Yet, in



Photo.] Griffon Vulture. [Copyright.

From "The Country-Side" Stereographs of the London Zoo.

spite of appearances, it is lucky for the vulture then that its head has no feathers, which would become clogged and soaked with blood. The Griffon Vulture (*Gyps fulvus*) is one of the commonest European Vultures, building in inaccessible cliffs in the Mediterranean region. It is light brown with black shades and markings, and a white ruff between its bare neck and feathered breast.

The Week's Wild Life in Pictures.

(See page 115.)

THE scientific name, "*lugubris*," given to the pied wagtail (1) can only refer to the amount of black in his plumage; because a less lugubrious bird than this dapper little "dishwasher," as rustics commonly call it, can hardly be named. The amount of black in its plumage is, however, its most important feature, because this distinguishes it from the rarer white wagtail. The difference between them is that on the head and body the pied wagtail shows more black than white, and the white wagtail more white than black. In other words, the white on the pied wagtail's face and neck is surrounded by black; whereas the black bib of the other is surrounded by white. This is easily observed; and by observing it you find that the white wagtail is not so rare as is usually supposed. The white wagtail has always a grey back, too; but as the females and young of the pied wagtail are always grey on the back this is not a safe distinction.

2. As explained in a recent issue the plan of the cocoon of the emperor moth is the opposite to that of a trap; for the strands which interlace across the opening are so arranged as to prevent anything getting in but to allow the moth, when the time comes, to walk out easily. The moth, however, is one of those which do not always emerge in the year following that in which they lived as caterpillars; and it is probable that if chrysalids were taken out of their cocoons now it would already be possible by their appearance to learn if the moths inside are destined to emerge next spring or not.

3. Few sea fish afford such good sport as the billet when it is taken on fine tackle. It takes the bait with a savage rush, and from that time until it is landed a fierce struggle ensues, the fish zig-zagging this way and that with remarkable rapidity and power. It is only known by the name of billet while in an immature state, and upon reaching maturity (when it is about the size of a cod) it goes by the names of coal fish and rock salmon. The latter name would be more appropriate to the young fish, which has much the shape and manner of the salmon, while the full-grown fish is like a blackish-tinted cod.

4.—The ostrich-plume feather moss (*Hypnum crista-castrensis*) is a very beautiful kind of moss, which may be found at the present season nestling among the heather and other undergrowth in the shady parts of woods. It is a fine golden colour, and contrasts well with the dark green of other mosses. It is by no means common everywhere, and the specimen figured here was gathered in Cumberland, in the Beacon Wood, Penrith. The male and female plants are separate, and grow in loose tufts. The leaves are grooved and toothed. It flowers and forms fruit in summer.

5.—The purple ear flap fungus (*Stereum purpureum*) is very common, and is to be found on dead poplars and other trees. The colour is purplish—this particular specimen was of a lovely heliotrope shade. The hymenium (membrane bearing the spores) is quite even, without the radiating gills of the common mushroom, and the folds

and spines of other common fungi. Professor Percival, of the Agricultural College, Wye, says that this fungus is the cause of "silver leaf," the deadly effects of which upon plum and peach trees are only too well known to fruit growers. (See sixth report of Woburn Experimental Fruit Farm.)

6.—Great confusion exists in many parts of the country between the stoat and the polecat, both often going in the south-west by the names of fitch, fitchet, or fitchew. Yet they are not really at all alike—except to a certain extent in the villainous smell which they make in self-defence. The stoat is reddish-brown above and white below; with a black tip to the tail, while the polecat is blackish-brown, with pale marks near the mouth and ear. In winter in the north the stoat turns white (all except the black tail tip), and is then the ermine. In the south of England, however, it seldom changes colour. Although not so courageous for its size as the weasel, a trapped stoat snarls savagely and tries to bite.

7.—Hoar-frost acts like enchantment, revealing unexpected beauties in the most neglected corners; and in a year like this, when flies and moths were abroad in early December, the hoar-frost gives us unusual opportunities to admire the symmetry of the orb web which the garden spider *Araneus* or *Epeira diadema*, spun so recently upon the sheltered shrubs. A very interesting contrast may be noted between this web when covered with hoar-frost and the same sort of web when purposely dusted with flour. For the flour adheres only to the threads which go round and round, and not to the straight radiating lines, because the latter are not beaded with gum, whereby flies are caught.

8.—There was some discussion lately as to whether the mistletoe ever grows on the elm; and it was found that the supposed instances of elms carrying mistletoe in Hampton Court Park were really limes. Here, however, is a photograph sent by a reader of an elm tree which is very thickly infested with the parasite. The growth of the tree, however, seems scarcely typical of the common elm (*Ulmus campestris*); and it will be interesting to procure a sample of its foliage in the summer. Incidentally the illustration seems to show how injurious mistletoe is to its host, since the branches most infested are stunted and bear no branchlets.

A Problem of Galls.—I notice in your paper of this week (December 8th), page 66, that in referring to Cynips kollari, you say "you believe no one yet knows for certain whether there are ever any males of this Cynips." On looking up the matter I find that the Cambridge Natural History (Insects, by David Sharp, vol. 1., page 530), referring to this species among others, after saying that during many years' study Harlig was unable to discover any males, goes on as follows: "During the course of these futile attempts it was, however, seen that a possible source of fallacy existed in the fact that the insects were reared from collected galls, and these being similar to one another, it was possible that the males might inhabit some different gall.

Adler endeavoured to put the question thus raised to the test by means of rearing females from galls, and then getting these females to reproduce, parthenogenetically, galls on small oaks panted in pots, and thus perfectly under control. He was quite successful in carry-

ing out his project, and in doing so he made a most extraordinary discovery, viz., that the galls produced by these parthenogenetic females on his potted oaks were quite different from the galls from which the flies themselves had been reared, and were, in fact, galls which gave rise to a fly that had been previously considered a distinct species and of this both sexes were produced." The book then goes on to say that Adler's observations were confirmed by other observers and thus the alternation of generations in the Cynipidæ was thoroughly established. Possibly you have a later work excluding this species, but knowing that you wish to be correct on every point, I thought I would point out this reference.—EDWIN HOLLIS, St. David's Hill, Exeter. [The latest and best authority I know is Mr. G. Carter Bignell, F.E.S., author of a very able monograph on British oak galls. He differs strongly from the conclusions quoted above, as his own experiments, carefully conducted so late as 1902, tend to prove that Cynips kollari cannot be reproduced by virgin flies, but that the male remains to be discovered. It was for this reason that I said that no one knows for certain whether there are ever any males.—ED.]

Nesting Boxes for London Parks.—Dear Sir, "Would it be possible for the B.E.N.A. to place nesting-boxes, securely pad-locked, in the London parks next season, out of children's reach?—Yours, etc., C. L. COLLENETTE." Is there any energetic London member who would take charge of this idea as hon. secretary? If so, I should be glad to hear at once, as no time must be lost if it is to be done this year.

British Wild Life Stereographs

SERIES 1, 2s. 6d.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes.

SERIES 2, 2s. 6d.

11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat.

SERIES 3, 2s. 6d.

21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Pills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs.

SERIES 4, 2s. 6d.

31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

WILD FLOWER SERIES, 2s. 6d.

1, Musk Thistle, Wayfaring Tree, etc.; 2, Sweet Woodruff, in bloom; 3, Wild Hyacinth and Dewberry Bramble; 4, Broad-leaved Garlic and Yellow Dead-nettle; 5, Dandelion, in fruit; 6, Red Campion, amid woodland herbage; 7, Butter-bur; 8, Wood Sorrel, amid herbage; 9, Cuckoo Pint; 10, Wild or Dog Rose.

FROM A READER.

Rowhams Mount, Nr. Southampton.

Dear Sir,—Many thanks for the stereoscope and stereographs of yesterday. I think they are perfectly splendid, in fact could not be better. Seen through the stereoscope they seem no longer a picture but an actual scene in real life. That I think is the highest praise a stereoscope could have.—Yours thankfully,

D. STUART-MENTETH.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 114.)



1. Pied Wagtail, *Motacilla lugubris* (B. Hanley). 2. Cocoons of Emperor Moth, *Saturnia carpini* or *pavonia minor* (S. M. Wallace). 3. Billet or Young Coalfish, *Gadus virens* (S. Aluco). 4. Ostrich-plume Feather-moss, *Hypnum crista-castrensis* (J. C. Varty-Smith). 5. Purple Ear-flap Fungus, *Stereum purpureum* (E. Astbury). 6. Stoat, *Mustela erminea* (C. S. Sargisson). 7. Frosted Web of Garden Spider, *Epeira diadema* (G. B. Norreys). 8. Mistletoe, *Viscum album*, on Elm (Rev. S. N. Sedgwick).

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Nature Records of the Week.

(Sent in by readers of THE COUNTRY-SIDE.)

Notes from the Bell Rock Lighthouse.

THE prevailing wind being from West, and weather clear, very few migrants were seen here in November. About the middle of the month another short-eared owl was seen circling round the tower, but it did not alight, and several grey crows were seen passing shorewards. On 16th a common snipe was killed by flying against the lantern glass, and two snow buntings were caught. The weather towards the end of November was extremely mild, and in the vicinity of Arbroath thrushes were singing as if it were April month. Very large flocks of lapwing were seen in the neighbourhood, and when passing through fruitful Fife per rail, but with the harder weather now prevailing many will likely have gone South. Good though the weather was, large flocks of geese were seen making for a favourite rendezvous—the Basin at Montrose. Flocks of eiders and a few long-tailed duck are every day fishing near the rock. There has been for some time a larger gathering than usual of herring, lesser black-backed and kittiwake gulls about, but the majority are young birds—scories. They watch eagerly for anything they can purloin from the eiders, and for the emptying of the cook's slop-bucket. Food seems to be very scarce otherwise, except at low water, when they may get a few starfish, or a crab. Several cormorants have been occasionally fishing round the reef during the day. As usual, on several occasions this month, gannets, puffins, and guillemots have been seen, so, although they leave their breeding haunts, some of them at least do not move far a-sea. That very interesting "creation," the sea-serpent, having been reported as seen in our locality lately, we have eagerly



Photo.]

Weasel Killed in Edinburgh.

[Copyright.

looked for a visit of his mythical majesty, but, so far, it is only in imagination we have seen "it" squirming spirally up our funnel-like abode, till it looked in at our kitchen window. Not even a seal or porpoise has been seen lately. (R. C., December 14th.)

WEASEL. The subject of this illustration was killed while running along the pavement in Grange Road, a busy street of Edinburgh. —(M. Donnelly.) [Weasels often breed, unsuspected, in gardens; but on the other hand this may have been an escaped specimen.—ED.]

SWANS.—A flight of six passed over Ryde Pier, I.O.W., on December 4th.—(Regular Reader.)

PURPLE SANDPIPER first seen November 22nd at Cullen, Banffs.—(J. Gowan.)

CUCKOO.—"I am writing to tell you that I heard a cuckoo distinctly give fourteen or fifteen notes on December 13th at 7.15 a.m. Some people I have told have thought that I was talking nonsense; but there are others in the neighbourhood who can also say that they heard this bird. Is this not very late, especially for a bird which is supposed to be so regular in its migration?"—A. N. Turner, High Beeches Cottages, Handcross, near Crawley, Sussex.) [See "Country-Side Notes."—ED.]

WAGTAIL: Fine hybrid wagtail exactly answering to the description of the one seen near Wells, Norfolk, on November 20th, seen at Offham, near Lewes, Sussex, December 11th.—(J. S. Adams.)

SWALLOWS: A few seen at end of November and first week in December at Skibbereen, Co. Cork.—(T. R. Roycull.)

SWALLOW and two **SAND-MARTINS** seen from November 25th to December 11th, near Havant, Hants.—(H. Beeston.)

YELLOW-HAMMER singing December 10th at Torquay.—(T. Price.)

CORNBUNTING singing December 8th, Cullen, Banffs.—(J. Gowan.)

ROBINS pairing again, December 12th, Wells, Norfolk.—(E. K. R.)

STARLINGS in a garden in Exeter, where crowds of starlings are fed; all belong to the green-headed or Old English species.—(Miss B. Pasmere.)

MISSAL THRUSHES: Two fighting so fiercely that one was picked up, December 10th, near Northampton.—(G. H. Lewin.)

Marked Birds.

ROOK, with white feather in left wing and the body feathers on left side white, on December 14th, at Wembley, Middlesex.—(M. M. Woodman.) **THRUSH** with white breast and

wings, near Penrith. — (S. Booth). **BLACK-BIRD,** a cock, with a white ring round its neck has spent both winter and summer for two or three years in a garden at Rainhill, Lancs. (C. E. Bromilow); a specimen with a pure white head seen for last three months at Liverpool. [This is probably the same bird which was observed at Warrington, Lancs., some 140 5 0 0 240 6 17 6 390 8 5 0

London Notes.

CLAPHAM, S.W.: Bats flying on the evening of December 5th. A pure white linnet, save for few brown feathers on back amongst a flock on Clapham Common on December 8th.—(H. Rees.) **BIRDS' SONG:** Thrush and blackbird singing in Battersea Park on December 9th.—(H. Rees.) **GULLS** seen flying over Finchley Road to the N.W.—(G. Davis.)

GORSE in bloom on Hampstead Heath, December 16th.—(G. Davis.)

Butterflies and Moths.

PEACOCK BUTTERFLY flying on December 12th at Cardiff, Glamorgan.—(W. D. Huxtable.) **BLACK ARCHES MOTH** (*P. Monacha*) and the **FEATHERED GOTHIC** (*H. popularis*) have both been plentiful this year at Totnes, Devon, though scarcely noticed previously.—(A. H. Swinton.)

MARVELLOUS VALUE IN CYPHERS INCUBATORS.



Having on hand a limited number of 1905 patterns CYPHERS INCUBATORS we will clear them out at extremely low prices, as follows:

	£	s.	d.
25-120 Egg Standard	4	2	6 each
25-220 " "	5	12	6 "
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Carriage Paid in England and Wales: to Scotch and Irish Ports.

These are NOT second-hand goods, HAVE NEVER BEEN USED, are PERFECT IN EVERY RESPECT, and were all made up last season previous to placing our 1906 patterns on the market. They are slightly different from this pattern but are record hatchers, and we guarantee them to outmatch any other make of incubator on the market or money refunded.

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Same Prices as usual:	£	s.	d.
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Our Special British and Colonial Catalogue No. 9 sent on request; also Booklet on Foods and Feeding. Every Poultry Keeper should have them.

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B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

*All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

Special Advantage for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches; 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an association in which no fees are charged for membership. Amount previously acknowledged £13 14s. 5d. Since received: 1s. Braintree Natural History Society.

B.E.N.A. Branches.

A GOOD IDEA is being put into practice by the hon. secretary of the Chatham branch. Local newsagents are given notices of the programme, meetings, etc., of the branch to insert in each copy of THE COUNTRY-SIDE which they distribute.

MANCHESTER: It is proposed to divide Manchester District into four sections, North, East, South and West. Hon. secretaries are already provided for the South and East: will some members in the North and West who are willing to take up the work kindly send their names and addresses?

Identification of Specimens.—Specimens will be identified for members who enclose a stamped and addressed cover, as below:—

TUNBRIDGE WELLS DISTRICT.—*Objects of general natural history:* Mr. R. R. Hutchinson, Belmont, Prince's Street, Tunbridge Wells. *Fungi:* Mr. A. Holmes Baker, 46, James's Park, Tunbridge Wells

FOR MEMBERS GENERALLY.—*Flowering plants and vascular cryptogams, also non-marine mollusca* (land and freshwater shells): Mr. B. T. Lowne, "Ravenscroft," Bromley Road, Catford, S.E.

Wild Flower Seed Exchange.—A number of members have volunteered to act as hon. secretary of our Wild Flower Seed Exchange; and one of the first to offer, Mr. B. T. Lowne, "Ravenscroft," Bromley Road, Catford, S.E., has been selected. He writes:—

"As I grow a number of wild plants I could materially assist in the exchange. I have by me a fair quantity of the seed of Deadly Nightshade (*Atropa Belladonna*), Dame's Violet (*Hesperis matronalis*), and Rose-bag willow-herb (*Epilobium angustifolium*), which I should be most pleased to distribute either free or in exchange. Another season I could save the seed of Hound's-tongue, Absinth, Nettle Bellflower, Meadow Sage (a rare and beautiful plant), Chicory, etc." All members who would like to exchange wild-flower seeds should communicate with Mr. Lowne, always of course enclosing a stamped addressed envelope for reply.

Free Distribution of Wild Flower Seeds and Plants.—Several members have kindly offered to distribute seeds or plants of certain wild flowers; and applicants have in each case been numerous. Sometimes it will happen (as in the case of the distribution of books: see below) that the demand will exceed the supply, and the question arises, how best to deal with

the stamped and address envelopes of disappointed applicants? The best plan appears to be that we should have an hon. secretary to look after our plant-and-seed distributing department, and Mr. A. Holmes Baker, 46, St. James's Park, Tunbridge Wells, has undertaken the work. He will gladly refrain from interfering with private members who may be good enough to offer to distribute their seeds themselves; but he will take charge of (1) all consignments of seeds or plants which members are willing to give away but do not themselves wish to distribute; (2) all stamped and addressed envelopes which distributing members were unable to fill; and (3) all applications from members who would like to have some interesting wild-flower seeds or plants. I hope that all members who have now or will have in season any wild-flower seeds or roots which they are willing to give away will send them to Mr. A. Holmes Baker, to whom also all those who would like to share in the free distribution should apply. These, of course, should send stamped addressed covers in which the seeds or plants may be sent to them.

CALVARY CLOVER.—Members who would like to receive two or three pods of Calvary Clover may send a stamped addressed envelope to Mrs. Clarkson, Alpina, London Road, High Wycombe.

EXCHANGE OF SPECIMENS.—Miss M. M. Mortlock and Mr. W. W. Mortlock, The Mill House, Bushey Heath, Herts, are willing to assist in the exchange of botanical specimens.

Mr. B. T. Lowne, Ravenscroft, Bromley Road, Catford, S.E., will exchange non-marine shells with other collectors.

Mr. M. J. Harding, Old Bank House, Church Stretton, Shropshire, will exchange local forms of butterflies with other collectors.

Schools' Mutual Aid.—This scheme, of which the Hon. Cordelia Leigh, 32, Chester Street, Grosvenor Place, S.W., is hon. secretary, has the support of members of the Committee of the Children's Country Holidays Fund and the Central Council of the Fresh Air Fund; and it is believed that, should the experiment now being inaugurated by Miss Leigh with two pairs of linked town and country schools prove successful, the Educational Committee of the L.C.C. will be willing to consider the question of defraying the postage. Will teachers of town or country schools desirous of participating in the advantages of mutual aid send in the names and addresses of their schools and the numbers and age limits of their scholars? It is understood that every country school applying is willing to send to some town school fortnightly parcels of named natural "specimens" and that every town school will be willing to send in return an arranged assortment of illustrated articles, papers, etc., suitable for "general knowledge" instruction in the country school, as well as for playtime reading. If any school would be able, through the assistance of persons locally interested, to pay the postage upon the parcels received or sent, this should be stated; but it is hoped that there will be no need for it.

Our Photo. Competition.

TWELVE GUINEAS IN PRIZES.

We are awarding twelve guineas a year in prizes for photographs by our readers.

Photographs intended for the January competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Photo Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

The Bactrian Camel.

THIS is not the Camel often described as "the ship of the desert." That title belongs to the one-humped Camel of West Asia and North Africa, where a light, swift breed, known as "Dromedaries," has been established. It is a mistake, however, to describe all one-humped Camels as Dromedaries. The home of the two-humped (Bactrian) Camel (*Camelus bactrianus*) is Central Asia, where it is the chief beast of burden, carrying as much as 1,000 lbs. of goods—



Photo.]

[Copyright.

The Bactrian Camel.

(From "The Country-Side" Zoo Stereographs.)

500 lbs. slung on each side. Besides the hump, which you cannot help seeing, and the water tanks in the stomach, which you cannot see, holding 1½ gallons of reserve drink that will last three days, the peculiarities of the Camel are the flat sole of its foot uniting the two toes, and the horny growths on its knees, breast, etc. When its soles are worn to the quick in travelling, the Camel's owner patches its feet with leather fastened with thongs drawn through the horny knee-growth. The British soldier in the East calls the Camel a "Humming bird," because it makes such a grumbling noise when being loaded; and when a dog snaps at a Camel's heels, the Camel will sometimes kick the dog a considerable distance. At times Camels become vicious and bite savagely; wherefore Mahomet taught:—"Place your confidence in God, but watch your Camel."

FROM A READER.

Mr. D. J. H. Carter, "The Manse," Chalford, Glos., writes of our Wild Life lantern slides:—"Many thanks for your prompt attention. The slides were much appreciated and were returned from Nailsworth this morning."

A Picture Calendar Free.—A beautiful illustrated calendar for 1907 has been prepared by Spratts' Patent, Limited, and a copy will be sent post free to any reader of THE COUNTRY-SIDE who cares to apply for it. There are twelve sheets, one for each month in the year, printed in two colours and the pictures which are by first-class artists include chow chow, toy pomeranians, old English bobtailed sheep dog, bull dogs, retriever, Scottish terrier, Airedale terriers, fox terriers; also houdans, cochins, grey parrot and Prince of Wales' pheasant. At the back of each picture is some valuable technical information upon the subject portrayed. Applications should be sent without delay to Spratts' Patent, Limited, 24 and 25, Fenchurch Street, London, E.C., mentioning THE COUNTRY-SIDE.

The Garden.

Coreopsis Grantii,

An African Plant that is treated like pot-grown Chrysanthemums.

THIS handsome plant is a recent introduction from Uganda, although it was discovered by the African explorers Speke and Grant during their expedition in 1860-3 to discover the source of the Nile.

It flowered at Kew in midwinter last year where it formed a neat, compact little bush two feet high, with elegant fern-like leaves and long stalked, bright yellow flowers, quite as beautiful as those of the well-known *C. grandiflora*.

This year there is a large batch of plants of it at Kew, and they are much more promising than the previous year's plants in consequence, no doubt, of their having been treated exactly the same as pot-grown chrysanthemums.

The flowers, which are about two inches across, continue to develop for a month or more.

In Uganda this plant occurs in large patches on the hill sides, flowering in December, when it makes a conspicuous display, and is known as yellow chrysanthemum.

Work for the Week.

Causes of Failure.

THIS is a good time to take note of those plants in the garden which do not succeed owing to cold or exposure, and on the other hand, of those that look healthy and happy either in one's own place or in neighbouring gardens.

Plants often fail despite care in their cultivation, sometimes because the soil does not suit them or the position otherwise disagrees. It is not worth while to struggle with them when other plants may be found which do not object to the conditions provided.

Rhododendrons.

Rhododendrons, for instance, object to a limey soil and the presence of lime may not be suspected until the rhododendron shows by its behaviour that it is there.

Beautiful though rhododendrons are, they are not missed if the selection of evergreens that will thrive in a limey soil is made with judgment. Laurustinus, choisya, some of the cotoneasters, arbutus, the bay, yew, holly, tree-ivy, box, pyracantha, garrya, euonymus, these are evergreens that rarely fail in ordinary garden soil. The point is to limit the contents of the garden to plants that always look happy in it, and there will then be less trouble in keeping it in good order.

The Garden in Mid-Winter.

In mid-winter the garden should be brightened by the presence of plants that look cheerful. There are *Jasminum nudiflorum*, *Cornus spathii*, *Cornetia mucronata*, the common barberry, *Daphne mezereum*, the cardinal willow, common gorze, and *Ruscus aculeatus*, a most useful little evergreen which never fails to arrest attention owing to the peculiar character of its stems and leaves. These are plants which are easily obtained, and transplant safely.

Do not overcrowd.

It is a mistake to attempt to grow too many things. Usually borders are



Pl. 10.]

Coreopsis Grantii.

A handsome plant recently introduced from Uganda.

Rose Beds, etc.

Rose beds and the front of borders need not remain bare; they afford suitable conditions for early flowering herbaceous plants such as pansies, wallflowers, polyanthuses, anemones, forget-me-nots, and the early phloxes. If not already planted, such bulbs as Spanish and English iris, fritillaries, and *Lilium candidum* may be put in now.

Digging Operations.

Digging operations must be continued when the weather and ground are favourable, and we must repeat the advice given a few weeks ago, to bury in the bottom of the trench formed when digging the top two inches or so of soil.

In this way seeds of weeds, germs of fungus diseases, eggs and grubs of insect pests are permanently disposed of, as none of them has a chance of developing if buried at a depth of from nine to twelve inches.

The soil under fruit trees should, for the same reason, be sliced off with a spade, buried in the border, and replaced if necessary with new soil or farmyard manure.

Mildew on Gooseberries.

Where there is any reason to suspect mildew on gooseberries they should be sprayed every month with Bordeaux mixture, beginning in January. This will destroy the spores and external mycelium which winter on the growth buds and, if allowed to develop, would prevent them from expanding in spring.

Buddleia Globosa.

WHERE this Chilean bush is happy, and it is pre-eminently so in the warmer and moister parts of the British Islands, it is a very striking object in June, when it is studded all over with globose heads of bright orange yellow flowers which last for weeks. Even in the coldest districts it may be grown successfully against a south wall.

There are many gardens in which this and other good-natured, distinctly decorative shrubs might very well replace the monotonous laurel, privet, and pontic rhododendron.

It was introduced into England by a Chelsea nurseryman in 1774, owing its name to an English botanist, Dr. Buddle. For years it was cultivated as a greenhouse plant until some venturesome gardener tried it in the open where, to the general surprise of its admirers, it proved hardy and developed most excellent qualities.

There are bushes of it in southern gardens ten or twelve feet high and as much in diameter. The leaves are green above and silvery below. According to Sir Joseph Hooker, another species of *Buddleia* named *Colvillei* is the most beautiful shrub in the Himalayas.

Metake Bamboo.

Even for positions shaded by buildings or trees there are suitable plants which will look happy if tastefully arranged. We have a border on the north side of a high building in which very few plants would stand a chance. It is planted with the common Metake bamboo, which looks happy all the year round, dances and rustles in the wind, is full of variety of form in the disposition of its culms, and has given no trouble since it was first planted eight years ago.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 87. VOL. 4.

JANUARY 12, 1907.

1d. WEEKLY.

The Earth as a Planet.

By NORMAN LATTEY.

THIRD in order among the planets spins our earth. With it a new order begins and the phenomenon of satellites, for neither Venus nor Mercury, the two interior planets, have any attendants. Moreover, endowed with a comparatively rapid rotation, the earth enjoys alternate periods of light and darkness, which we call day and night, with a moon to relieve the monotony of the latter. In fact, our globe is a singularly fortunate member of the solar system.

Even more wonderful is the unique conditions by which we are surrounded. Graduated, instead of extreme, seasons, heat and cold generally distributed organic life abundant, and many other benefits have all been obtained by the mere tilt of the earth's axis a few degrees out of the perpendicular!

To this tilting we owe our seasons, with the consequent lengthening of the days in summer and their shortening in winter, for it will be obvious that if the earth's axis were at right angles to the plane of its orbit, in other words, if it always stood upright in relation to its path in space, the days and nights would invariably be of the same duration.

The sun would rise and set at precisely the same times throughout the year, and we should be in a perpetual state of spring or autumn, i.e., midway between summer and winter, each hemisphere receiving the same amount of sunshine. This state of affairs actually exists on March 20th and September 22nd, the dates of the vernal and autumnal equinoxes, when the days and nights are equal all over the world.

The accompanying diagram will make the matter clear, the position of the earth in regard to the sun being shown at intervals of one month. It must, of course, be remembered that, though the earth spins round on its axis irrespective of its movement round the sun, the inclination of that axis always remains in the same direction.

If we suppose the sun in the centre, and the earth at (1) it will be evident that at this period the North Polar regions of the

latter are bathed in continuous sunshine. It is, in fact, midsummer in the northern hemisphere, which is tilted towards our luminary, thus keeping the neighbourhood of the Pole out of the shaded area. This explains the phenomenon of the "Midnight Sun," since it never sets for several weeks.

As the earth's axis maintains its direction of inclination, it will be seen that by the beginning of autumn (position 4) exactly half the globe is illuminated and half in darkness, hence equal days and nights, and "between" seasons.

At position 7 (the reverse of position 1)

round the heavens in twenty-four hours without reaching the horizon. By the time position 2 is reached it will be seen that a portion of the small circle has become immersed in shadow, indicating that though the day is still long, the sun has just commenced to dip below the skyline slightly west of north, to rise very shortly slightly east of north. With the advancing season the disappearance of the sun would take place earlier and earlier each night, and nearer and nearer to the west, its succeeding reappearances being correspondingly later and later and more and more to the west.

At last, at the autumnal equinox (position 4), it would rise due east and set due west, dividing the day and night into equal portions all over the world.

Having crossed the Equator, the entire sequence of appearances would be reversed. The sun would set farther and farther from the west, and at the same time describe an ever-diminishing arc in the sky. About mid-November the solar disc would be barely elevated above the southern horizon, to disappear completely a week or two later. Then would commence the long and dreary Arctic night.

In temperate latitudes continuous sunshine for the whole twenty-four hours is, of course, unknown, though the "Midnight Sun" may be observed

as far south as Trömsö, in Norway. Theoretically it should not be visible below the limits of the Arctic Circle, but refraction causes celestial objects to seem higher above the horizon than they are. Here in England the nearest approach to this phenomenon is during the month of June, when, owing to the sun sinking but a short distance below the northern horizon, there is no true night, evening twilight merging imperceptibly into the gray of dawn. At this period the sun sets in the north-west and rises in the north-east, bringing about the longest day on the 21st (called the Summer Solstice), after which the evenings begin to "draw in," until on September 22nd we have the equal day and night.

it has become winter in the northern hemisphere, and consequently summer in the southern underneath. By the same gradual process equal days and nights again occur at the commencement of spring, when position 10 is attained, and the annual circuit completed with a return to position 1. Now, it is evident that to an observer on the surface of the earth these changes must produce an apparent displacement of the sun in the sky in a northerly and southerly direction, and the extent of this displacement will vary with the point of view of the observer. For instance, at midsummer in the Arctic regions (indicated by the small circle round the Pole) a person would see the sun circling

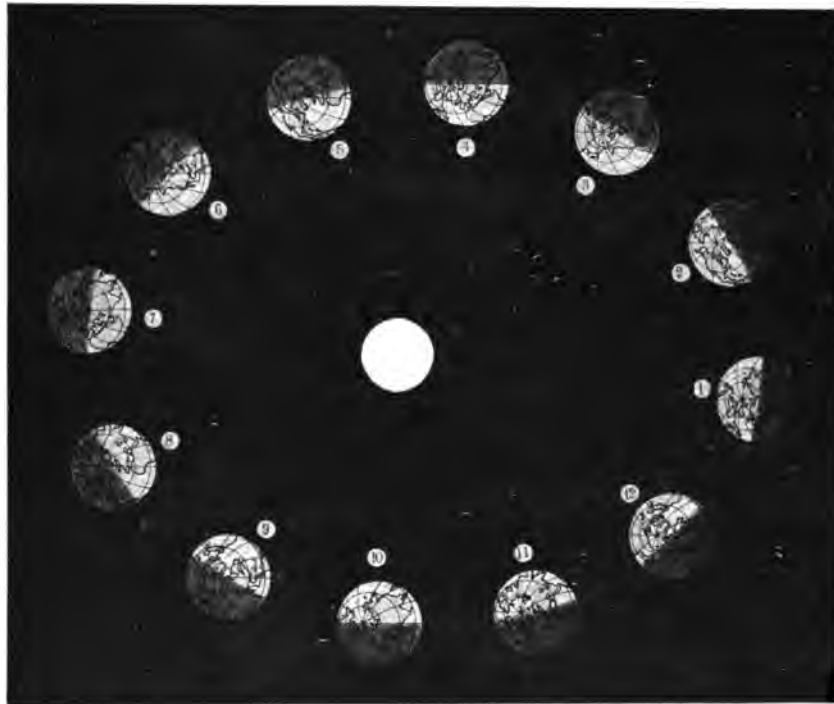


Diagram showing the cause of the Seasons as the Earth revolves round the Sun.

the

Country-Side Notes.

Warham, Norfolk.

*He prayeth best who loveth best
All things both great and small;
For the dear God, who loveth us,
He made and loveth all.*

—S. T. COLERIDGE.

I WOULD draw the attention of all to the draft form of declaration of the Collectors' League for the Preservation of Wild Life, which is published this week in our B.E.N.A. column. This declaration has been drawn up in the belief that collectors—of whom I know so many personally—are as good men at heart as the rest of us and equally desirous that our very rare wild creatures and plants should not be exterminated. Collectors know that a number of these are perilously near extinction in Britain; but they cannot make up their minds to spare such exceeding rarities, because "others" will not do so. The B.E.N.A. proposes to find out who these "others" are. In one way or another it will manage to give to every naturalist and collector in Britain an opportunity to sign the declaration.

In the short list of birds which need preservation at the collector's hands some have already been reduced to the rank of occasional visitors and some have never quite succeeded in establishing themselves as permanent residents. I know localities, however, where the Hoopoe and the Oriole have now bred in successive years; and there is good reason to believe that spoonbills, avocets, etc., would breed here if collectors allowed them to live. Over-zealous game-preservers are, of course, largely responsible for the threatened extinction of the rarer birds of prey; but the operations of the dealer who systematically collects, and the so-called "collector" who buys guaranteed "British" rarities, extend over the whole field of wild life. It is, therefore, to the amateur "collector"—the man whose money keeps the mischievous game going—that we directly appeal. Will any number of "series," I ask him, of swallow-tailed butterflies in private cabinets and store-boxes compensate Britain for the loss of the living creature? Yet every collector must know that this loveliest of British insects is being practically wiped out by dealers who collect the pupæ to supply collectors' demands.

There are yet other items in our B.E.N.A. column this week which I cannot allow to pass without comment, namely, the such exceedingly generous offers as those of Mr. Allen Silver, of Upper Tooting, S.W., to give advice to any members regarding the treatment of British or foreign birds and to lecture to schools or local gatherings, and of Mr. Fred. J. Arnott, of Springfield Road, Brighton, to photograph natural history specimens for Sussex members, free of charge. I have published Mr. Arnott's letter in full because it is so happily expressive of the spirit of mutual help and kindness towards THE COUNTRY-SIDE, which have been so characteristic of our B.E.N.A. members from the beginning and never more so than during the Christmas and New Year season lately passed

Most of these kindly greetings were penned in English cities; but many come from far and wide. Thus, writing in a Cardiff engine-room Mr. Percy Rayner Mullis concludes a delightful letter:—"But there—I can only say, on behalf of my colleagues and myself, you will have very faithful and devout followers here at Cardiff."

And from Skibbereen, Co. Cork, writes Mr. F. R. Roycroft:—"If the joy of giving joy to others is the greatest joy, you ought to be a very happy man, for your paper is a delight." The same phrase comes from B.E.N.A. 457 in the Rue Lepic, Paris:—"Your paper is a delight. I wish everybody in the world could have it. What thousands of friends you must have in every part of the globe! No doubt on Christmas morning many will silently wish you a Happy Christmas and hope that 1907 may bring many joys in its train for you." I will quote only one more, from South Africa, because I think that this is the only part of the Empire from which we have not yet printed any of the kind messages received.

It comes from Ulundi, G. M. Co., Ltd., Eureka, Transvaal, and runs as follows:—

DEAR SIR,—I have been meaning for a very long time to write to you about your most excellent little paper, THE COUNTRY-SIDE, and seeing in this week's paper letters from America and New Zealand, I really will send you one from Africa. A friend in the Old Country has sent me out THE COUNTRY-SIDE from the first, and it is without exception the finest paper on the subject I ever saw, and, like our New Zealand friend, I look forward to it every week, and look at it before the rest of the English mail.—Yours truly, G. W. JEFFERY.

I said I would quote no more, but, looking through the bundle of kind letters I find that I must, because the most touching of all are the greetings from old folks, pathetic in their regrets that there was no COUNTRY-SIDE when they were young. Of these I will quote only one brief sentence from Mr. John Knapp, 125, Preston Drive, Brighton:—"I am upwards of 80 and infirm. Years ago I should so have liked to assist the B.E.N.A., but it is too late!" I wish I could say what I feel when I put back the prosaic rubber-bands that bind together these bundles of messages from good friends that I have never seen.

"The Little Owl," writes a Cottenham reader, "is getting itself distributed throughout Cambridgeshire. One was shot near Ely a few days ago." But I doubt whether this wider distribution of Little Owls (shot and stuffed in glass cases!) altogether serves the purpose of the public-spirited naturalists who spend so much money and pains to establish this charming, day-flying owl in Britain. What hope can there be of preserving any rare birds in security when the one idea of three-fourths of the men who have ten shilling licences is to "secure" each feathered visitor with a charge of shot and get a taxidermist to "preserve" it. In proportion as a man works to exterminate

wild nature, so he is nowadays regarded as a "naturalist"!

"As a constant reader of your paper," writes Mr. H. T. White, of Kedleston Road, Derby, "I have followed closely your arguments as to the cause of a bird's song. I had always felt that the idea of its being an expression of happiness was wrong; and in most respects your contention that it expresses defiance does fit in with nature; but I am at a loss to account for the fact that those unhappy birds, which are kept in cages, should sing at all. A canary is, of course, an artificial creature altogether, and not safe to argue from, but why do our English birds sing in confinement? I should be grateful for your ideas on the subject."

I am sorry if I stated the facts so clumsily as to give readers the impression that birds' song has always so actively hostile a meaning as "defiance": because this suggests the presence of an enemy or a rival to be defied. Its meaning is rather self-assertion, and under natural conditions only the self-assertion of a vigorous male. Of course this often acquires the emphasis of defiance, as is well shown in the singing matches of caged chaffinches; but the presence of a rival is not necessary to cause a male bird, whether caged or free, to break into song. The sense of ownership arising from possession of a home is the commonest incentive to song; and the bird in a cage is often more ready to assert himself in this way than are his free relatives, because he has so much more leisure and fewer distractions.

A very good instance of this meaning of bird-song is afforded by the robins. During the mating and breeding season only the male bird sings, asserting his dignity as the owner of a home and a mate, for which he will fight if challenged; but during the winter the family is scattered. Father, mother, son, and daughter each appropriates a separate hunting ground, and each sings, thereby indicating readiness to fight for possession of the hunting ground if challenged. Later, when spring is returning, the females, young and old, abandon their independence and cease their singing, because instinct bids them to follow mates, and there is no room in a bird-household (or in most human homes) for two to be self-assertive. When, however, a female of any kind of bird becomes, either through age or disease, incapable of breeding, or when she is confined entirely by herself, you will often find her putting on the self-assertive habit of a male, and doing her best to sing like him.

The fact that a male bird in a cage is always ready to assert itself by song and will attack another male that is put into the cage, has some bearing on the question whether it is cruel to keep wild things in cages, even if they are well-fed and carefully tended. This is a question which everyone who loves wild life must often have asked himself, balancing his desire

to have the creatures always near him against his wish to do them no wrong. There are many who answer this question off-hand. "Of course it is cruel," they say, "to cage wild things, compelling them to live under unnatural conditions, pining for liberty." And at first one feels inclined to assent to this view without hesitation: because somehow the bird is in all our minds the type of liberty, and a cage always suggests a prison.

But here a story of a skylark comes to mind. It was fluttering its wings in a little cage in a butcher's shop. "See," cried a lady customer, "how the poor thing pines for its liberty, and tries to soar up into the sky!" "Pines for its liberty does it, maam?" asked the butcher. And, so saying, he opened the cage door. Out popped the lark and flew straight to a shelf at the back of the shop. From this the butcher, chuckling, took down a tin box, and, shaking from it two or three mealworms, watched the lark gather them in its bill and fly back to the open cage to eat them comfortably and at leisure. It could have soared up into the sky, had it wished; but it preferred the mealworms and the safe cage. Everyone who is familiar with caged birds could cap this narrative; and it cannot be right to denounce everyone who keeps caged birds when these, having accidentally gained their liberty, so frequently return to captivity of their own accord—sometimes even persuading wild companions to come and share its advantages with them.

For, among the "unnatural conditions" of bird life in captivity—assuming, of course, that the birds are well and wisely cared for—are peace and plenty and long life. Some years ago I set free a pair of collared doves. During the summer they have nested in the shrubberies, but in the winter they have roosted about the house. They have reared so many young ones that it has not always been easy to distinguish them from their children. Last year, indeed, we lost all trace of their identity until one day a half-starved dove was found fluttering feebly on the ground and being mercilessly pecked and buffeted by another. Picking it up, we discovered it to be our original female dove, the great-great-grandmother of her assailant. She was nearly blind in both eyes, apparently from constant pecking, and so weak that she could hardly stand. Yet only a few days before she had been sitting upon eggs in a cypress in the shrubbery.

Her eyes were bathed and she was placed in a cage, where she rapidly gained health and strength. Meanwhile her husband, after sitting upon the abandoned eggs for two whole days without relief, took to himself another wife. But when his old wife was released again a very few seconds of desperate fighting sufficed to dispose of the interloper's claims to the nest, and we saw the old pair happily reunited. But nature's rules are inexorable; and, though she might still be mistress at her own nest, the old female dove was very soon in almost as bad state as before the bullying of her descendants at the feeding place. So she was picked up again and restored to the cage; and there,

within a week, we had to put her old husband too.

Perhaps he had tried again to win another wife and had been worsted by a rival; but, whatever the cause of his trouble may have been, he was very nearly at his last gasp when he was discovered, much pecked and dishevelled, among the geraniums in a flower bed. Very soon they were both looking comfortable and fat side by side on a perch in their cage, and magnificent was the courtesy with which the old dove cooed to the old hen. Their legs and feet were very scaly with age; but they still preened themselves with vigour and evidently enjoyed life. Yet it is certain that if they had been compelled to return to the struggle for existence in the garden both would very soon have been dead.

But for the lucky accident, too, of finding both of them when they were nearly dying, we should undoubtedly have been responsible for shortening their lives by turning them loose. Although, moreover, these doves hardly come under the description of wild birds, since they were probably born in captivity, the same rule undoubtedly holds throughout wild nature, that, so soon as any creature becomes weak through illness or age, or accident, it is killed. In most cases no doubt it is seized and devoured by one of its watchful natural enemies; but its fellows of its own kind, especially of its own family, are pitiless persecutors.

And a very simple arithmetical calculation shows how cruel, compared with the care of man, is the treatment accorded to wild things by nature. With kind and reasonable management small birds can always be kept in health and apparent contentment for a number of years. Finches will commonly live for fifteen or sixteen years, and doves that have been kept for thirty years are not unknown. Among our common wild birds, on the other hand, it is the exception for an individual to live for twelve months. Finches, which produce two broods of about four each, or wild doves, which rear at least three pairs of young during each breeding season, do not grow more numerous in the world. In the spring and summer each couple multiplies in one case to about ten and in the other to about eight individuals; yet in the spring of the following year there are only about the same number of breeding pairs as before. In one case eight out of ten, and in the other six out of eight individuals, have died. If anything like this average rate of mortality occurred in our bird-cages, who would find pleasure in breeding or keeping birds?

An honest difference of opinion exists among our readers as to the advisability of "improving the country" by introducing wild plants, butterflies, etc., in places where they are not found at present; and, so far as individuals are concerned, this must continue, because we cannot all look at the matter from the same point of view. On one side is the scientific naturalist who wishes to keep the wild life in animals and plants of each locality uncontaminated, and on the other the mere nature-lover who wants to see as many interest-

ing wild creatures and wild plants as possible around him. Between these extremes we cannot look for complete agreement; but it ought not to be difficult to draw up a limited programme of "improvement" to which no one would object.

Such a programme is, of course, necessary if the B.E.N.A. is to take systematic action in the matter, because we cannot have any standing differences of opinion among members. I think, then, that we may take it for granted that every scientific naturalist will agree with Mr. C. Nicholson, of Chingford, who stipulates that plants—and the same applies to birds, butterflies, etc.—should only be reintroduced to those districts from which they have been exterminated by the hand of man, where, as at Bournemouth, for instance, the speculative builder threatens the existence of an exceedingly rare plant the removal of roots or the sowing of seed in safe and suitable spots in the vicinity.

The B.E.N.A., then, will meet the wishes of those members who are scientific naturalists and desire to keep their local "fauna and flora" uncontaminated, by introducing into districts where they are not found at present only those species which have been exterminated from those districts by the hand of man. But, on the other hand, our scientific friends must not raise any objection to efforts which may be made to render rare plants common; and they must also concur in the policy of beautifying the surroundings of our towns wherever possible with such beautiful wild plants as primroses, violets, common ferns, etc., such insects as Peacock and Red Admiral butterflies; such birds as goldfinches, and so on. I shall be glad to hear from any naturalists who are willing to join an informal committee for the purpose of drawing up lists of species which may be introduced or multiplied in the various districts of Britain without offence to science.

E. Kay Robinson.

January Daisies.

The clouds hang low in the gloomy skies,
And the north wind blusters o'er dale and down,
Yet daisies open their golden eyes.

Wherever a pallid sunbeam tries
To soften the rigour of winter's frown,
Though clouds hang low in the gloomy skies!

Dainty and trim do the buds arise,
Each blossom fair in her pink-tipped gown!
The daisies open their golden eyes!

Bravely they bloom though the deep snow lies
In drifts o'er the dead leaves, dull and brown,
When clouds hang low in the gloomy skies!

No tulip flaunts in her varied dyes,
And never a rosebud can win renown!
Yet daisies open their golden eyes!

Sadly the chill wind sobs and sighs,
And the hills are wearing a snowy crown,
When the clouds hang low in the gloomy skies,
Yet daisies open their golden eyes!

MAUD E. SARGENT.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Shoulder-Blades not Eaten.—A friend of mine, a breeder of Aberdeen terriers, has, through three generations of them, found that on giving them the bones of rabbits every bone has been masticated except the shoulder-blade, which one might have thought less difficult to devour than many of the others. Can there be anything peculiar in the shoulder-blade to account for this?—(Rev.) J. CONWAY WALTER, Mablethorpe, Lincolnshire.

Swallows and Starlings.—As long as I can remember starlings have built in the lower chimneys of the terrace where I live, but I cannot remember swallows ever building about the houses at all until last year, when nests were built in most, if not all, of the coal-houses in the terrace, and these nests were mostly occupied again this year. With the advent of the swallows the starlings forsook their old haunts. Since the departure of the swallows this year, the starlings have returned, but only to the higher chimneys. Is it not unusual for starlings to be driven away by swallows?—G. T., Belfast. [It was probably a coincidence only; for it is not possible, I think, that swallows should drive starlings away.—Ed.]

The Scales of Eels.—In the article "How fishes got their scales" allusion is made to the eel as a fish destitute of scales. Such is not the case, as its skin is covered with scales. I don't suppose the writer meant that the eel had no scales, but his remarks are calculated to mislead general readers.—B. STURGES DODD, Carrington. [Yes, the phrase "the naked skin of the eel" might mislead, although, of course, the writer did not mean that all eels, including the common eel, are destitute of scales. He was referring, no doubt, to the "eel" as a class of fish which includes the conger and other marine eels which have naked skins without scales.—Ed.]

Kingfisher Hovering.—On November 29th, when passing a kingfisher's haunt I heard its piping very loud. Approaching carefully to within about 20 yards I saw the bird perched on a post and I noted that every time the bird piped, it raised and lowered itself on its perch (much as a pigeon when cooing). After a short time it flew over the water directly in front of it and hovered over the water, just like a kestrel, for over a minute. Then, like a flash, it plunged into the water, captured its victim and, perceiving me, flew away.—G. F., Quorn.

Wonderful Sagacity of a Kitten.—I really must tell you of a two-months' old kitten we have only had four days. On going to a concert last evening in a schoolroom about forty yards off, we left the kitten in the garden, enclosed within a stone wall and a high wooden gate. Our seats in the concert room were in the second row from the platform; therefore, right at the top end of the room. About a quarter of an hour after our arrival and after the orchestra—including violoncello and double-bass—had been making a great noise and the whole room was full, all at once the tiny black kitten jumped up on to its mistress's lap. Of course it is easy to take for granted that somehow the kitten managed to escape from the garden, though it meant either jumping a brook or climbing the high ivy wall by coach-house gate; and one can even imagine it finding its way by chance to the schoolroom, though not in a straight line (it would not matter to a cat, it being pitch dark); but how did it find its way through all those closely seated people, quite 125 of them, up to the top of the room to its own mistress? When first I saw it I thought one or two people had recognised it as ours and had handed it up to its owner: but the

strange thing is no one seems to have seen the mite till it sprang up on to its owner's lap.—M. V. G. HUNT, Blewbury, Didcot, Berks.

A Nettle Swallow.—There is no more fatal method of capturing birds than driving them into a net, always supposing they can be so driven. They get their heads through one mesh and their wings through two more, and then they are usually "done," though some will wriggle out if given time. The swallow shown was captured, with others, in the ever-popular Waders' aviary at the Zoo, for transference to the Western Aviary during the



Photo.] [W. S. Berridge, F.Z.S.
Swallow Nettle at the Zoo.

Showing the risk of this method of catching birds.

winter. All the summer the swallows have lived comfortably in the outdoor aviary, for the swallow, although a most unsuitable cage-bird, is reconciled to captivity with remarkable ease, even in a small space, and in a large one seems quite at home.—F. FINN.

"Abortive Tadpoles."—With regard to the statement in the issue of December 15th that tadpoles do not become frogs if not supplied with animal food, the year before last my brother had three, which were fed on nothing but chickweed, and all became frogs. The water was changed every two or three days. However, when many tadpoles are kept in a small jar, and the water is seldom or never changed, they do not become frogs, although they can get plenty of animal food by eating one another. At least, that is my experience.—E. M., Aberdeen.

Listening for Worms.—Nearly every morning a thrush comes on to the lawn and seems to listen for worms. It will stand still in a listening attitude, then move its head sharply towards where the sound apparently comes from. It then (if necessary) hops nearer to the spot, waits for a second or so with its head close to the ground, next, with a quick movement, its beak goes into the ground and it has the worm. I have seen this (all of it) take place within 3 feet of me. The last movement is never performed without a worm resulting therefrom. Do you think, then, that

thrushes catch worms by listening for them? —CHARLES E. BROMILOW, Rann Lea, Rainhill. [Yes, thrushes undoubtedly seem to hear worms moving in the ground: so do plovers. Blackbirds also hear the movement of cockchafer grubs. Starlings, gulls, and rooks do not seem able to hear either worms or grubs.—Ed.]

Sparrow-Hawk's Nests.—Having had an experience of over 30 years' constant natural history work, during which time I have observed a considerable quantity of sparrow-hawk's nests (certainly well into three figures) I am able to add testimony and endorse Mr. W. Bond's statement.

Only on one occasion have I ever observed a nest otherwise than either new, or re-built to some degree, and I think I am able to account for that instance, which was as follows. On flushing a hawk off an old, deserted heron's nest, I climbed up to same and found it contained three eggs of the sparrow-hawk. The nest, an unusually large one and somewhat flat, had not the slightest trace of having been in any way improved, or added to, by the hawk. This fact exercised my mind somewhat as being more than curious. Two days afterwards I met the game-keeper and asked him if he had seen any hawks about the wood. He said he had shot twice through a nest the previous week (this, by the way, is the usual manner a keeper destroys the young, etc.). I asked him to show me the nest, which turned out to be about 150 yards away from the heron's; and, owing to its dilapidated condition, I had previously passed it over.

On examining it I found, although much damaged by the shot, indications of at least one sparrow-hawk's egg. I thereupon concluded the hawks, having lost their nest, had found the old heron's close and ready to hand, and in such an emergency had laid the remainder of the clutch of eggs in same. Needless to say I did not mention the fact to the keeper.—NATURE.

Animals and Windows.—I was sitting writing by the window, when I heard a bang against the glass. I looked out and there was a hare sitting on the lawn. It seemed quite dazed, I suppose from jumping head-on to the window, and there was blood on the window. It was only about 3 feet away and I am sure it saw me, but it remained quiet and began cleaning itself. Then a terrier, which was with me saw it and began barking and the hare moved off slowly and went up the stable yard. I have seen it in the garden often, but what made it jump against the window, which is about 2 feet from the ground?—CHARLES E. BROMILOW, Rann Lea, Rainhill. [I have known a wild squirrel to leap against a window in the same way. In both cases the animals probably saw the reflection of trees, etc., in the glass and were trying to get to what looked like an extension of the garden.—Ed.]

The Sparrow's Song.—In "Country-Side Notes" of December 8th, you speak of sparrows assembling in the afternoon in your shrubberies to sing. I have observed the same thing. A week or two ago I was walking by the Serpentine, in the late afternoon, when I came to the island where the ducks roost, and also innumerable sparrows. From the island came an extraordinary "hubbub of chirping" as you describe it; but the notes seemed a little higher than the sparrow's ordinary chirp; and the noise was so incessant that it almost resembled the whirring of machinery.—Miss K. SPEAR-SMITH.

The cock sparrow sometimes sings a somewhat harsh song in the minor key—something between a trill and a chirrup, but really of the nature of song. It is quite different from, and really musical as compared with the loud and self-assertive chirrup commonly used by sparrows.—J. HENDERSON.

An Instructive Section.—The butcher's broom is a prickly shrub, in general appearance halfway between a stunted holly and a boxbush. One is surprised, therefore, to learn that it belongs to the lily family. This mag-



Photo.] [J. H. Crabtree.
Section of Stalk of Butchers' Broom.
(Magnified.)
Showing that this shrubby plant is really a relative of the lily.

nified section of its stalk, however, shows the typical arrangement of the vascular bundles in monocotyledonous plants like the lily. These bundles are scattered through the interior tissue which is not marked off into a central pith with medullary rays running therefrom, as it would be in holly or box. The plant is not rare in the south and west, and when met with should be examined on account of its "cladodes" or stiff leaf-like twigs, in the middle of which the stalkless flowers are borne, while the true leaves are mere scales at the base of the branches.—H. SCHERREN.

How to Mark Wild Birds.—Can any reader suggest a permanent method of marking birds in the coming year? It would be an excellent thing if the members of the B.E.N.A. could agree on some fixed manner of marking birds, especially those whose annual migrations are long. Is there no way in which certain feathers could be permanently blanched without injury to the bird? If not could we not use some form of leg band which would not hamper the bird in flight? I endeavoured to mark half a dozen young snipe and peewits last year, but expected no result as the birds probably got rid of the marks in a few days.—"LONE HUNTER."

Fed on Flowers.—The account given by a correspondent of a robin eating fungus is interesting, and reminds me of two thrushes in our garden who had a peculiar fancy for feeding their young ones with yellow flowers. One of these birds was scouring the lawn for worms followed by her young one, whom she fed at intervals. Presently she snipped off one of those flowers like miniature dandelions—*Leontodon* is the correct name—and dropped it into the gaping mouth of the little one, who gulped it down with the utmost satisfaction. This she did three times to my great astonishment. Another day I watched a thrush searching for worms on the lawn, and at intervals he carried off a worm into the bushes where he evidently had a nest of young ones. Presently he snipped off a buttercup and flew with it into the bushes, returning very soon with empty bill as usual. Can you offer any explanation of the extraordinary behaviour of these birds? That the flowers were culled intentionally is quite obvious, especially in the first case.—IDA NORMAN, Worcester.

"Truce Between Bird Neighbours."—I have often noticed sparrows' nests built among the foundation twigs of rooks' nests.—G. STOREY, Isle of Man.

How the Fox Travels.—The other day I followed a fox trail across several large grass fields. By the order of the footprints the fox had evidently proceeded at a canter, but in three places the marks in the snow showed where he had made a clean spring of at least six feet. Is this done to throw enemies off the scent?—J. B. GARNETT. [No; a more probable explanation may be that at these places the fox made leaps at birds which got up under his feet.—ED.]

Hybrid Pigeons.—In answer to Mr. Lewin's question in your issue of November 10th, I have this year bred five tumbler-stockdove hybrids from eight eggs, three of which were accidentally destroyed. Unfortunately all of the young birds died when between two and three weeks old, notwithstanding the fact that one was hatched out by a pair of common pigeons. These early deaths I cannot understand, as the young birds all seemed to be well fed. Three of them were blue and the other two white with some brown feathers, taking after the cock tumbler in colour. The hen stock-dove was a young bird when I "winged" her in September last year, and she has been kept ever since in a wired hutch with a hen woodpigeon and a tame wild rabbit. With better accommodation and a different mate I am in hopes of obtaining better results next year.—E. OSWIN BAILY, Clondalkin, Co. Dublin. [Mr. A. H. Patterson, the East Coast naturalist, has recorded the successful interbreeding of pigeons and doves.—ED.]

A Curious Trout.—Under this heading Messrs. Waldie and Taylor in your issues of August 12th and September 16th, 1905, described curiously malformed trout which had, in each case, the upper jaw turned inwards towards the throat, giving the fish a strange bulldog-like appearance, with its lower jaw alone sticking out. Now I have in spirits of wine the head of a small trout with an exactly similar malformation. The fish was taken, by hand, from a mill pond here after the water had been run off. Has any explanation been offered which might account for this strange peculiarity so often occurring?—E. O. BAILY, Clondalkin, Co. Dublin, Ireland. [Is it possible that trout in those magnificent dashes which they make through narrow waters when alarmed are liable occasionally to collide with obstacles with such force as to break the upper jaw and almost drive it down the throat, causing a permanent deformity?—ED.]

A Twining Flower Stem.

—Two years ago I erected a rustic arch in my garden, at one side of which there was an ordinary blue lupin (*Lupinus polyphyllus*). I was very much surprised to find one of the leading flower spikes entwining itself among the cross bars of the arch. It made three distinct twists, embracing three bars, the distance between each being about four inches. My garden is a very open, wind-swept one, and the prevailing wind is a south-west one, which, as it happens, would blow the flower stalk away from the twining

which makes it all the more remarkable. I am aware the petiole of many leaves have a tendency to twine round objects, but I have never observed anything similar in a flowering spike. Perhaps some of your readers may have had a similar experience.—C. H. RUSSELL, Wimbledon.

Curious Anemones.—In my marine aquarium I have two rather curious plumose anemones (*Metridium dianthus*), both white in colour. One of them when nearing the top branches off into two distinct columns each furnished with the beautiful frilled disc which distinguishes this noble anemone. The other anemone when examined from the side does not appear unusual, but when looked down upon, several rows of short tentacles are seen dividing the mouth into two. Each of these anemones can eat with either mouth independently. I believe it is generally understood that *Dianthus* never grasps its prey with its tentacles. I have experimented with several and find that they will grasp the food and pass it from one tentacle to another until it reaches the mouth, where it is slowly sucked in.—E. F. OHLSON, Lower Tooting.

Another Freak of Frost.—In the last issue was shown an illustration of the way in which the needles of frost, when they have effected a lodgment all round the bare twigs of a leafless bush, continue to pile themselves upon each other until each twig seems clothed with bristly white foliage. The guiding principle appears to be that the crystals of frost always form on the coldest points of any surface when the moisture of which they are made can be caught. The leafless twig was equally cold all round; so at first the frost formed uniformly, but afterwards the spicules of frost themselves were the coldest points and upon these other spicules heaped themselves. In this illustration, however, we see how in the case of stout evergreen leaves like the barberry—and the holly, as shown in recent issues—the frost crystals form only upon the edges, because these leaves are margined with hard, dry tissue which does not even retain in a

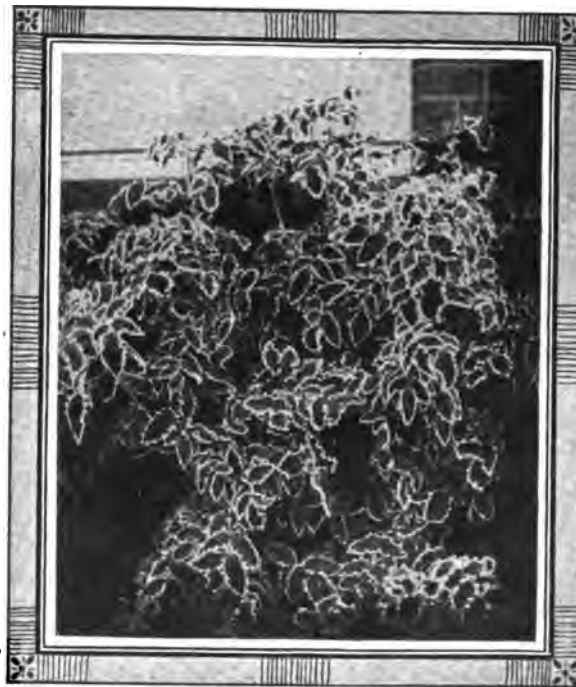


Photo.] [E. Kell.
Hoar-Frost on Barberry Leaves.

By effecting a lodgment only on the margins of the leaves the frost produces a very pretty effect on such evergreens.

frost the very slight heat of those parts of the leaf where the sap is fluid. The result is very beautiful, however.—A. J. H.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, JANUARY 12, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

The Moral Nature of Birds.

By FRANK FINN, B.A., F.Z.S.

FOR several years past I have had the conviction, borne in upon me by constant study of my favourite animals, the birds, that virtue and vice have their roots far below humanity, and that among our fellow-creatures in feathers may be found the same moral phenomena as among ourselves, their vast intellectual inferiority being taken into account.

And, just as among men, we find certain nations, and certain racial groups of nations, have their easily-besetting sins, so it is with species and natural groups of birds; and similarly, individual differences of character are common among bird species. It is easy to illustrate these propositions by concrete examples; indeed, one has only to take up any work on the practical management of birds to see how familiar these facts are to fanciers and breeders.

Take, for instance, our two domestic ducks, descended from perfectly distinct—and not very nearly allied—species, the common duck and the Muscovy duck. They differ morally as much as physically; the common duck is active on foot but almost flightless, good-tempered, noisy and easy-going, but an indifferent and careless mother, whose duties are most commonly entrusted to fowls in her stead.

The Muscovy, on the other hand, can fly and sometimes does so, but is a lazy, sluggish bird, walking and swimming but little; it is also quiet, and indeed has little vice.

But its passions are strong, both for good and ill; the duck in this species is a good mother, and can safely be left to rear her own brood, while the drakes fight savagely—probably even to the death, for I once saw a couple stand in the water and box with their wings till one was exhausted, when the other proceeded to hold his head under water, and would probably have drowned him had I not distracted his attention by throwing a clod on his back, and thus defeated his murderous purpose.

As an example of individual variation in duck character, I may cite an instance of a common duck I once saw which not only reared her own ducklings well, but maintained her attachment after they were full-sized; indeed, I found out her peculiarly affectionate nature by picking up one of her off-springs—they were very tame—when she ran at me, and her owners told me she always showed resentment even when her adult young were interfered with.

Of course we all know the *wild* duck is a good mother, but the species must have the seeds of moral degeneracy in it, or the common carelessness of ducks would not be so notorious; and it is noteworthy that the Muscovy is not thus affected, although a bird of ancient domestication; so that captivity is not the only cause.

As with the ducks, so with the geese, we have two species in domestication, the common and the Chinese; but these are closely related, so much so that their hybrid offspring are completely fertile, which those of the two ducks are not. This

being so, one cannot expect much difference in their natures; the Chinese species is, however, certainly more noisy, and is said to be more pugnacious.

Both are polygamous in domestication, but not nearly so much so as ducks, and a gander really loves his own particular goose. I have seen one in India—a Chinese, there the usual kind kept—sitting by his chief wife as she sat on her eggs, with his neck laid affectionately across her back. A century ago, as the old author, Pallas, informs us in his "Zoographia Rosso-Asiatica," it was customary to have fights between hybrid ganders, bred between these two species, and each combatant was accompanied by his favourite goose, who acted as his second, laying her neck across his back and cackling encouragement of his pugilistic efforts.

The vice of infanticide is not uncommon in hens of the pretty little Budgerigar or Australian grass-parrakeet; it is usually ascribed to unmated hens, but I heard of a case in 1905 in which a mated bird of this sex invaded a neighbour's nest, though there were plenty of vacant ones in the aviary, and killed or mangled the whole brood of half-a-dozen.

The moral variability of this bird is also shown by the varying statements as to its attachment to its mate, the belief that it will die if left alone by its companion's sudden decease being often refuted by experience; yet I have received one or two accounts of cases in which grief alone must have caused the speedy demise of the surviving bird of a pair.

Generally speaking, it may be said that hen birds have much less conjugal affection than cocks; but this may be due to the fact that hen birds are, in nature, in greater demand. Yet, among domestic birds, where a plurality of females is the rule under our management, we have individual attachments formed, as in the case of ganders, above-mentioned, and still more conspicuously in fowls.

The cock was, indeed, rightly described by one old writer as the knight or gentleman among birds; he is most reluctant to strike a hen, and everyone knows how he calls his wives to any food he may find.

The guinea-fowl, I may say, does the same thing. The pheasant does not, but is more likely to drive the hen away and eat the dainty himself; at any rate I have seen this done. He is also devoid of scruples about striking a female. It is a curious fact that when the practice of egg-eating arises among pheasants and poultry, it is a male vice in the former, while in the latter the hens are the culprits.

The pugnacity of the cock fowl towards his own sex has its exceptions. Last year two pairs of Red Jungle-fowl—the ancestor of the common fowl—were received at the Zoo from Mr. Fairfax Muckley, who has had the strain breeding for the last thirty years in his pheasant coverts.

The two cocks of these are so amiable to each other that they will perch and crow side by side, even in the presence of the hens. This can hardly be due to their wild blood—as a matter of fact they look more like feral domestic fowls than the wild-bred bird as I have seen it in India—because the Jungle-cock is naturally a hard and savage fighter.

The instinct of Chanticleer for keeping order and stopping fights among his wives and sons, is well known, but some birds carry the idea further, and interfere between aliens when these are in conflict.

The curious South-American Cariama, so well known at the Zoo by its distressing yells, is a case in point, and I once saw it act the part of policeman myself. It was when the Society's specimens of this bird were lodged in the great aviary devoted to gulls, herons, etc.

Two great black-backed gulls had had a fight, and the winner was remorselessly pursuing his defeated foe, whose bleeding scalp showed plainly enough that he was the beaten bird. The wounded gull passed the Cariama, and this bird at first started to pursue it also; then it turned round and facing the pursuing gull, sprang at it and dealt it such a blow on the breast as caused it to desist for the time at any rate.

I should like, in conclusion, to draw attention to a peculiarity in the nature of birds, in their relations with man, that seems to me to have a peculiar significance. This is, that the birds of Europe are, generally speaking, harder to tame than those of other countries; and it seems to me that there may be some connection between this fact and what history abundantly shows, that Europe is the home of free institutions, arguing a curious similarity in the moral natures of men and birds there, each being impatient of control.

Profitable Poultry Culture.

Amateur Photography.

NOTES FOR JANUARY.

ANDALUSIANS.

By "Chanticleer."

History and Points.

THIS week I shall draw my readers' attention to a most useful and profitable fowl, which belongs to the non-sitting, active breeds. I refer to the Andalusian, which was imported into England early in the fifties from Andalusia.

When first imported poultry breeders were slow to appreciate its egg-producing powers, but it is now firmly established as an excellent layer; in fact, it occupies the front rank, and it is doubtful whether any of our breeds now exhibited—excepting the Minorca—reward its owners with such large sized eggs as the Andalusian.

It is certainly a distinct variety as regards the colour of its plumage, which is a beautiful unique slate tint of blue with a lovely rich black lacing, but it is a matter for regret that owing to fanciers crossing the breed with the black Spanish, many of the chicken are bred too dark in colour, and even black.

It is exceptionally hardy, and if chickens receive proper attention, especially as regards rain or damp, they are easily reared.

However, I must admit there is a difficulty in breeding typical specimens, as it often happens that whilst one or two birds will be of the desired tint of plumage, a larger percentage of chicken will eventually display black feathers, in place of the beautiful lacing so admired in the show pen.

Then again many of the pullets often show upright combs instead of falling well over the side of the face like the other varieties of Mediterranean fowls. This is accounted for by the fact that when originally imported many of the hens had perfectly erect combs, but it should be widely known that one of the chief points in a typical hen or pullet should be a well drooped comb.

As will be seen in the accompanying sketch, the comb of the male bird is an important adornment, being not only large and erect, but well serrated and nicely set.

It will be seen that the cock's shape is broad at the shoulders, tapering nicely towards the tail, the breast being carried well forward and nicely rounded, and poised on rather long legs, free from feathers and of dark slate colour. The neck is carried well back, having rather shorter hackle feathers than many breeds.

The tail should be very full, flowing, and carried a trifle higher than other Mediterranean fowls.

Advice on Mating.

A few words on mating up a breeding pen of the profitable Andalusian will doubtless be appreciated. First, let me advise the purchase of a good cock or cockerel from a reliable breeder, and from a noted strain, paying, if possible, a reasonable price for the bird rather than purchasing mediocre specimens.

If possible the pullets or hens should be obtained from the same yard, so as to keep the strain intact, many of the failures of young beginners being due to the pur-

THERE are few objects more pictorial than a snow drift with its strange curvings and carvings, where the snow has tossed the flakes about. But it is one of the most difficult things to do justice to with a camera and lens. To snap wildly at a field of snow with a doublet lens is just waste of a plate. The plan is, to use one-half—either the front or the rear combination—and pick out the most pictorial half-dozen yards of drift which may be available.

It was mentioned last month when dealing with hoar frost studies that the white rime frost, and the blue sky, were photographically one and the same thing. So in snow work on a bright day it will be noticed that the shadows, on and under, the snow drifts are a most decided blue.

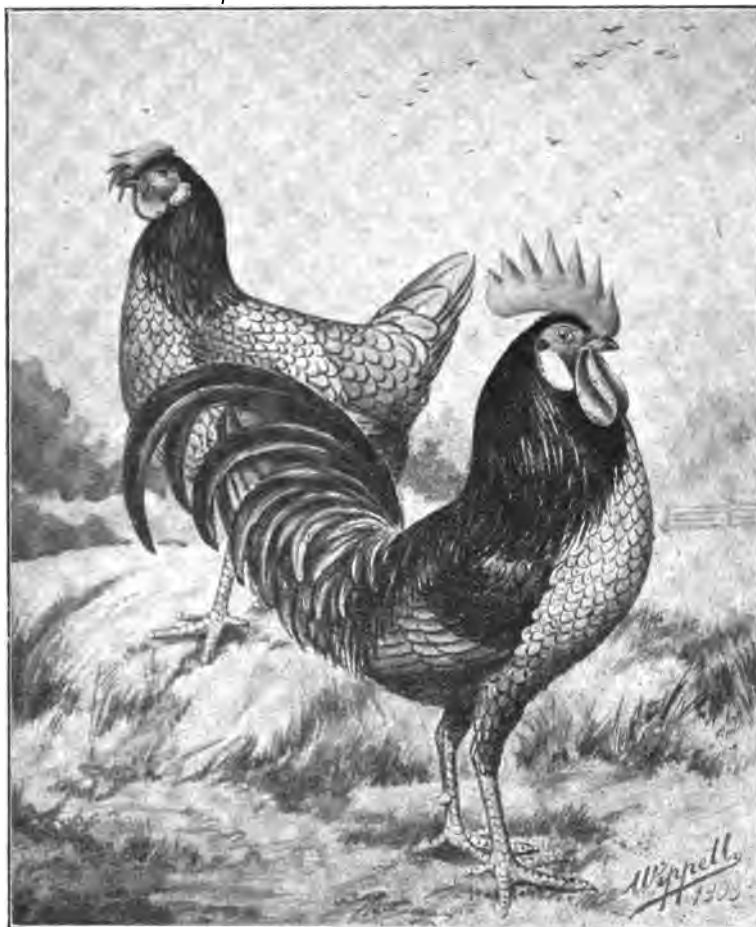
With an orthochromatic plate and a three times screen, it is possible to so cut down these blue rays that the carving of the snow wreath has a chance of showing in the finished print.

Before isochromatic plates were used so much, the plan was to over expose immensely, and correct the negative in development by flashing out the detail first, and then strengthening the negative; either by flooding with a stronger developer or by subsequent intensification. But by the use of a moderate screen matters have been much simplified. A Barnet or Kodak medium power screen will be at once cheap and also effective.

The developing of snow studies is a very ticklish matter. What has to be avoided is harshness. So the developer should either be metol hydroquinone or much diluted pyro-soda. The former is best for this particular kind of study, and Rodinal also has many advocates.

But if pyro-soda is used, the pyro must be in far less bulk—at first, at all events—than the soda. Suppose it is a formula in which equal parts is the rule. For snow work the plan is to take 1/3rd pyro and 2/3rds of soda, filling up the ounce measure with warm soft water at 65 degrees, tested with a thermometer.

The detail with this ought to flash up in a second or two if anything like a full exposure has been given, and it is most probable that it will be necessary to pour off the warm developer and douch the plate with cold water to stop or check the action. The next thing is to build up the detail which is out, and to that end the pyro solution should be added drop by drop.



A Typical Pair of Andalusians.

chase of birds indiscriminately from various yards, and of different strains.

For a good pen of birds likely to breed a large percentage of good blue chickens it is wise to select strong, healthy, light blue hens of the second year. Care should be taken to select only those birds which display a well-laced breast and have well-serrated but nicely drooped combs. If such birds are mated up to a cockerel of early hatch of rich glossy black hackles, with breast and underfluff of a darker shade of blue than the hens, good coloured chickens will be bred, and I would lay particular stress on the importance of an evenly laced breast.

The Week's Wild Life in Pictures.

(See page 127.)

IN many ways the grebes (1) remind us of the family relationship of birds with reptiles and mammals; and the little grebe or dabchick is the commonest of the group. Although the plumage resembles smooth, watertight fur, the bird has ample wings, which it uses twice a year upon migration. Its legs are placed so very far back that on land it can only painfully toddle in an almost upright attitude; but in the water its peculiar feet, of which each toe is a separate broad-bladed paddle, are splendid instruments for swimming and diving. Its tail is an absurd little tuft of hair. At this season dabchicks are often picked up in streets, gardens, and other strange places, having lost their way in searching for suitable winter waters.

2. When you see a hare or rabbit killed by stoat or weasel, the squealing victim always seems to be kicking itself over and over on the ground with something round its neck, which looks like a reddish-brown collar or comforter. But the struggles are brief and the squeals soon die away: for the whole success of these little murderers lies in attacking exactly the right spot, on the side of the neck behind the ear, where a bite causes paralysis of one side of the quarry's body, and the life-blood spurts out quickly. Otherwise it would not be possible for stoats and weasels to seize and kill animals so much larger and stronger than themselves.

3. The sand dab, flat-fish, or flounder is probably one of the best known and most easily caught of our sea fish. This latter fact is taken due advantage of, for it is commonly caught without any hook at all. A large loop loosely covered with netting, so as to form a shallow bag, and having some bait fastened to taut cross wires at its centre, is lowered to the bottom of the sea. After it has remained there some minutes the operator quickly and steadily hauls it up, and frequently quite a number of these fish are taken at one haul. The dab often comes a long way up slow and muddy rivers, and can live in fresh water.

4. When frost and icy winds have driven all other snails to seek refuge by burying themselves in their winter quarters, there is still this little greenglass snail—so-called because it has a shell like a tiny green glass bubble—that disdains to retire, but continues to roam actively about even in the coldest weather. This is a link between the slugs and snails, resembling the former in its mantle and teeth formation, and the latter in the shape of its shell. It is rather curious that this little mollusc, with a shell thinner than any other British snail, should be the hardest of them all; but it has its parallel in the winter gnat, one of the filmiest of insects, which dances over scenes of frost and snow.

5.—The hips of the wild rose are among the last of autumn's fruits to disappear in many districts, because very few birds can eat them, and among mammals only the field mouse—"long-tailed field mouse" or "wood mouse" of the books—seems to understand the art of nibbling open the orange-red flasks, and, avoiding the hairs

with which they are lined, to gnaw holes in the stoney seeds, so as to extract each tiny kernel. Among birds the greenfinch, with stout, sharp beak, seems alone able to split these seeds, though the waxwing swallows the fruits whole.

6. The black fingers fungus belongs to a genus of fungi distinguished by their stalked, club-shaped, or branched stroma. They are to be found upon dead stumps, gate posts, pea sticks, etc.; and the kind illustrated (*Xylaria polymorpha*) is generally found upon stumps. It is not uncommon, and looks like a number of little black candles, or deformed fingers (hence its name) standing up on end. The illustration shows the tiny prominences on the surface, and if a transverse section were made the spores would be seen in the little cavities corresponding with the prominences above-mentioned. These spores are contained in little bags or tubes (asci), each ascus containing eight spores; and the possession of these asci or spore bags is the distinguishing feature of a large class of fungi.

7. No words are needed to explain or describe this common object of the countryside, which may be seen wherever the frost makes fairyland of woodside and hedgerow. The reason why the frost thus distinctly traces out the outlines of the holly leaves is, I believe, that, in the hard margin which grows here and there into prickles round a holly leaf, there is no sap circulating, and it is there that the frost is able to reduce the leaf-temperature at once to its own level, so that spicules of ice can find foothold upon it.

Additions to the Natural History Museum.

By R. Lydekker.

SINCE my last note the skeleton of the Prince of Wales's Tibet dog has been placed on exhibition in the North Hall. This dog, it will be remembered, formed part of the Indian collection presented last summer by His Royal Highness to the Zoological Society; but it did not long survive its arrival in the Regent's Park.

From a comparison of the skull with several skulls of Tibetan dogs which have long been in the collection, it seems doubtful whether the Prince's animal was an example of the true Tibetan breed, as figured in Hooker's "Himalayan Journals," and confirmation of this view was afforded by the animal's general appearance in life, and more especially the nature of its coat. Pure-bred Tibetan dogs are magnificent animals, and appear to be related, not, as generally supposed, to the mastiff, but to the St. Bernard. The skin of a really fine specimen is a desideratum in the museum.

To pass from watch-dogs to toy-dogs, it may be noted that a celebrated example of the black-and-tan King Charles breed has been added to the collection in the person of "Champion Bend-or," the gift of Mrs. Jack Reed.

Still more notable is the accession to the Valhalla of departed prize animals of the mounted skin of the well-known chinchilla Persian Cat, "The Silver Lambkin," presented by Mrs. Balding, of Bromley. When in its prime—it died at the age of over seventeen years—this cat was re-

corded the honour of a portrait and a biographical notice in our contemporary the *Ladies' Field*.

A stroll through the one-half of the fish gallery at present open to the public will reveal several interesting additions, among which are a bonito and an angler-fish. The latter, although by no means so well stuffed as it might be, is a huge specimen, measuring apparently between four and five feet in length. With its enormous mouth, great goggle-eyes, and "feelers," it is the very incarnation of a hideous nightmare or the dream of a pantomime artist.

A step further and we are in the reptile gallery, where the *habitué* will notice that a new case has been placed near the east door containing three specimens of the curious Australian frilled lizards in characteristic attitudes. The fact that this creature runs on its hind legs in a semi-erect attitude affords, of course, no ground for regarding it as in any wise nearly related to the extinct dinosaur.

In the salamander and frog case the name "Congo Eel" attached to a newly acquired specimen will probably attract attention and possible comment. It is the vernacular American name for a remarkable eel-like freshwater salamander, which retains, however, unmistakable evidence of its amphibian nature in the shape of two pairs of minute limbs, each terminating in a couple of toes. From this feature it is commonly known in this country as the two-toed salamander. It has a relative—of which an example is shown in the same case—characterised by the retention of three toes to each limb.

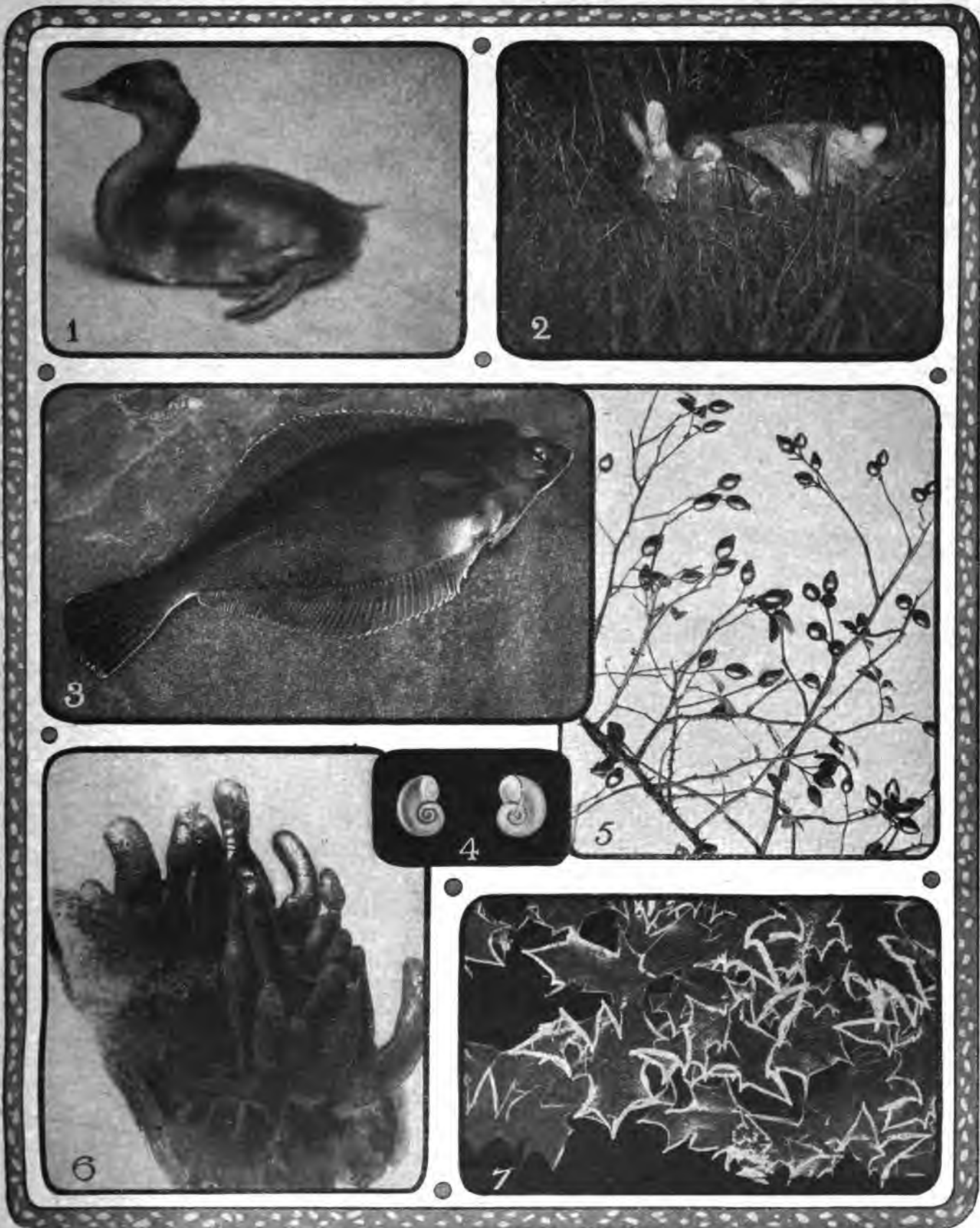
Women's Country Work.—The Exhibition and Sale of Farm and Garden Produce of the Women's Agricultural and Horticultural International Union will be held on July 17th, 1907, at the Botanic Gardens, Regent's Park. Any women-farmers, gardeners, bee-keepers, etc., are invited to exhibit; those who are not members of the Union will have to pay a small entrance fee. The secretary is Miss Wadmire, care of Mrs. Chamberlain, 5, Priory Mansions, Drayton Gardens, S.W.

"Caterpillars' Tricks."—In the recent article under this title the "palmer worm" was, of course, the common name (used by the Rev. J. G. Wood and others) for the caterpillar of the gold-tail moths. [The "stick caterpillar" referred to was that of the brimstone moth: "stick" and "looper" being familiar names applied to caterpillars of all geometer moths, which are rigid like snakes when at rest and loop their bodies when walking. The "tussock" caterpillar was, of course, that of the common pale tussock, commonly called the hop-dog, distinguished by the pale tufts or tussocks of hair which contrast strikingly with the velvety-black skin which is shown when the creature moves.

From a Reader.—21, Holly Lane, Erdington, Birmingham. Dear Sir,—I take an increasing delight in your charming little paper. It supplied a want that had never been satisfied till it made its appearance. Not only have I taken it in from the very commencement, but I have scattered specimens abroad to make it known and to induce others to take it. Every week I hail its welcome face, and I trust it has a long and prosperous future before it. Certain I am that the good it will do is incalculable. My heartiest thanks to you for your personal devotion to the cause we all have at heart.—Yours faithfully, WILLIAM FARROW.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 126.)



1. Dabchick, or Little Grebe, *Podiceps flaviventris* (W. S. Berridge). 2. Weasel, *Mustela vulgaris*, and Dead Rabbit, *Lepus cuniculus* (Oxley Grabham). 3. Flounder, or Sand Dab, *Pleuronectes flesus* (S. Aluco). 4. Green-glass Snail, *Vitrina pellucida* (A. G. Stubbs). 5. Hips or Fruit of Wild Rose, *Rosa canina* (B. Hanley). 6. Blackfingers Fungus, *Xylaria polymorpha* (E. Astbury). 7. Hoarfrost on Holly, *Ilex aquifolium* (B. Hanley).

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (similar to that on page 130), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.E.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Preserving Berries.—There is no way of preserving succulent berries in their proper shape except by keeping them in a preservative fluid.—(to F. E. Jarvis.)

Paralysed Rook.—Since the bird is capable of more movement than when first picked up it must be on the high road to recovery.



Photo.]

[H. Ellis.]

Paralysed Rook.

What is the cause of the almost complete paralysis with which wild rooks and crows are sometimes stricken I do not know; but I have found that feeding and care gradually cures it.—(to H. Ellis, Milford.)

Nesting Boxes.—I am glad that you had success with the nesting-boxes which you put up in accordance with my advice. Yes, by all means clear the old nests out of the boxes which were used.—(to C. F. BILSON, Swindon.)

Moth in December.—The moth which you caught on December 18th with thin body and ample tawny wings crossed by two conspicuous, irregular, dark bands, was a male mottled umber moth (*H. defoliaria*). The female of this moth has no wings. It appears in October; and December 18th is late for it.—(to C. F. BILSON, Swindon.)

Blackbird on Sucked Eggs.—It is certainly unusual for a bird to continue to sit (and to sit so hard as to allow you to touch her) upon eggs which had been sucked. From the shape of the holes, I should say that the eggs had been sucked by a bird, probably a jay. The eggs were a curious variety, without speckles, but a shaded dark zone round the widest part. In each case the hole was made through this zone.—(to A. E. DAVEY, Liscard.)

To Distinguish Tits.—The blue tit has a blue crown and white cheeks, with plumage bluish behind and yellowish in front. The great tit has black and white head with plumage greenish behind and yellowish in front. Both the cole tit and marsh tit have black crowns and whitish faces with plumage brownish grey behind and pale grey in front: the difference being that the cole tit has a white "thumb-mark" at the back of its head. The two which come to your nuts are probably the great tit and blue tit.—(to S. O. HALEY, Cleckheaton.)

Unanswered Questions.—Correspondents whose queries remain unanswered will find the reason in the "special announcement" above.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published.

B.E.N.A. Fund.—This small fund, consisting of voluntary subscriptions from members, has been established to defray the expenses which are inevitable in carrying on an association in which no fees are charged for membership. Amount previously acknowledged, £13 15s. 5d. Since received: 3s. 10d., W. G. Chalmers, Ballarat, Victoria; 2s., C. Nicholson, Chingford. Total, £14 1s. 3d.

Advice Regarding British or Foreign Cage-Birds.—I shall be pleased to help any member of the B.E.N.A. in matters connected with British or foreign birds in captivity if they care to apply to me, enclosing a stamped and addressed envelope for reply.—Allen Silver, 12, Romberg Road, Upper Tooting, London, S.W.

Free Lectures.—Should there be a school in any way connected with the B.E.N.A. or a local gathering of members, and they cared for a paper on British birds in a wild or captive state, or something about foreign birds, if it were in my power to interest them I should be willing to oblige, provided that it fitted in with my time and did not entail a large expense for a journey.—Allen Silver, 12, Romberg Road, Upper Tooting, London, S.W.

Free Photographs for Sussex Members.—As I am anxious to do all I can to help members residing in the county of Sussex, I shall be delighted to photograph free of charge any wild animal, bird, reptile, insect, or flower that members may like to send. The subjects (which may be alive or dead) should be sent carriage paid to me at the address below, and id. stamp should be enclosed for the return of the photograph; or if the subject is required to be sent back, sufficient postage should be enclosed for return postage. Of course, if members reside close by they can bring the subject. I shall also be pleased to go for country rambles with any members should they wish it. I hope all Sussex members will take advantage of this offer, and wishing good old COUNTRY-SIDE every success.—Believe me, yours sincerely, Fred J. Arnott, 29, Springfield Road, Brighton.

The B.E.N.A. Collectors' League for the Preservation of Wild Life.—In connection with the practical effort which is to be made by the B.E.N.A. to enlist the services of collectors themselves in preserving those rare creatures and plants which are in danger of extinction, the following form of declaration has been drawn up:—

"We, the undersigned, hereby pledge ourselves not (knowingly) to take, kill, buy, sell, or exchange any specimen, except such as are guaranteed to be foreign, of the following birds or their eggs:—Eagle, Kite, Merlin, Hobby, Peregrine, any Harrier or Buzzard, Osprey, Bittern, Spoonbill, Avocet, Great Skua, Kentish Plover, Raven, Chough, Bearded Tit, Oriole, St. Kilda Wren, Dartford Warbler, Hoopoe, Little Owl, Great or Little Bustard, Pallas's Sand Grouse.

"Nor of the following insects, or their

eggs, larvæ, or pupæ:—Swallowtail, Black-veined White, Black Hairstreak, Large Blue Butterflies, and Kentish Glory Moths.

"Nor of the following plants:—*Saxifraga cernua*, 'Teesdale' *Polygala*, New Forest *Gladiolus*, *Orchis hirsina* (Kent), *Cotoneaster* (Orme's Head), *Spiranthes romanzopana* (Ireland), Cornish Clovers.

"The only exception will be in the case of specimens bought, sold, or exchanged as part of a *bond-fide* collection, or found dead or injured, or killed by accident or mistake."

Criticism by members of this form of declaration and the lists of species to be respected will be welcome.

Local Information.—South Africa: "I shall be glad at any time to help any of your readers who may be interested in the natural history of this country, or to anybody who is thinking of coming out to advise them as to which part of the country to go to for any particular subject. Entomology is my favourite study; and I shall be delighted to correspond with anybody interested in the natural history of South Africa."—G. W. Jeffery, Ulundi G.M. Co., Ltd., Eureka, Transvaal, S. Africa.

Ballarat, Victoria, Australia: "I am pleased to offer my services on behalf of the B.E.N.A. to impart any information within my power to any members of the B.E.N.A. who may visit this district. We have many beauty-spots in the neighbourhood, and some localities are each a veritable paradise to the naturalist."—W. G. Chalmers, 127, Humfray Street, Ballarat East, Victoria, Australia.

Local Secretaries.—The undermentioned member is willing to act as local secretary for the district mentioned, and will be glad to hear from others willing to co-operate to establish a branch:—

YORKSHIRE.—Selby District: B. Hanley, Barby, near Selby.

Affiliated Societies.—The Tottenham Grammar School Field Club, numbering 50 members, has been affiliated to the B.E.N.A.

All young readers of THE COUNTRY-SIDE are invited to a special meeting of the Hull Junior Field Naturalists' Club, at 8 p.m., on January 11th, in No. 11 Room, Oddfellows' Hall, Hull, when Mr. R. J. Porter, F.G.S., will deliver his Presidential address and special exhibits of specimens will be shown.

Schools' Mutual Aid.—Birds' Eggs and Nests: It is, of course, understood that promiscuous egg-collecting will not be encouraged by country schoolmasters in order to supply town schools with interesting specimens. There would, however, be no objection to any country school sending specimens of the nests, containing a full set of blown eggs, of the following birds:—House-sparrow, starling, blackbird, thrush, greenfinch, and chaffinch. In addition there are always many abandoned nests and dropped eggs to be found; while in many districts to take some eggs of the bullfinch, jackdaw, or woodpigeon is to confer a service upon the farmers and fruit-growers.

Our Photo. Competition.

TWELVE GUINEAS IN PRIZES.

We are awarding twelve guineas a year in prizes for photographs by our readers.

Photographs intended for the January competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Photo Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

The Garden.

An Early Iris.

A Good Plant for the Mixed Garden.

RISES are among the best classes of plants for a mixed garden on account of their hardiness, their immense variety, and the long range of their flowering season. The family may be divided into two sections, the herbaceous irises, which have perennial foliage, and the bulbous irises, which come up every year from underground bulbs; and each of these sections may be roughly divided into three groups. Thus a bulbous iris may be either English, Spanish, or "miscellaneous," while a herbaceous iris may be either German, Japanese, or "miscellaneous." It is to the last group of miscellaneous herbaceous irises that the subject of this illustration, *Iris stylosa*, belongs. Its beautiful flowers are pale blue with a rich yellow blotch, and the plant thrives well in a light soil, when, if it is given a sheltered position, it will bloom freely in January. It is one of the few flowers that one can often gather when the ground is covered with snow.

Work for the Week.

THE KITCHEN GARDEN.

Radishes.

Radishes may be managed so as to have a small and constant supply of crisp, mild-flavoured roots from March to September. This is possible if a sowing is made every three weeks from the beginning of January, when the seeds should be sown in a shallow frame, preferably on a spent hot bed, covering the frame in frosty weather.

The best arrangement is to have a three-lighted frame, sowing one light at a time. After April the sowing may be made in the open ground.

In winter the lights must be kept clean, and they should be removed in sunny mild weather.

Radishes can also be raised in trenches, filled with fresh manure, which will afford sufficient heat to keep the soil warm. A depth of three inches of light soil over the manure is sufficient. The trench should run from north to south, and strips of wood should be placed across, a yard apart, to support a covering of mats in frosty weather.

The market gardeners of Paris raise radishes in winter, by sowing the seeds on hot beds, covered with a layer of soil, the only protection afforded being a covering with straw mats in frosty weather.

The radishes are fit to be pulled six weeks after sowing. The early turnip radishes are the best forcers.

Early Peas.

An early crop of peas may be obtained by sowing now in four inch pots, planting half a dozen seeds in each, using any light soil, and placing them in a temperature of about 50 degrees until they are three inches above the soil, when the pots should be removed to a cold frame, where they may be exposed to full air and light in mild weather.

Here they will grow slowly, and by April should be sturdy plants. They may then be planted each potful a foot apart in rows in a warm, sunny part of the garden.

Any early dwarf pea will do, Gradus or Sangster's No. 1 being excellent early sorts. The last named is favoured by the

the seeds in January in warmth, planting the seedlings singly in three inch pots, and keeping them in a cool frame until they are large enough to be put out of doors, when they should be planted on a sunny border, preferably under a wall, and protected in cold weather with hand lights, bell glasses, or, failing these, inverted flower pots.

It is advisable to put the cover on every night, removing it again in the morning, until the plants are strong, and there is no danger of severe frosts. Cold rains are apt to injure them, and they are weakened if the covering is on too frequently. Early London and Veitch's Forcing are two suitable varieties for this treatment.

Onions.

Where onions are grown, it is not too soon to prepare the bed by trenching the soil, placing a layer of good, well-rotted manure between the top and bottom spits, and dressing the surface with soot.

The first week in March is quite early enough to make the first sowing. If large bulbs are wanted, a sowing may be made now in a box kept in a cool frame, where the seedlings will come on to be transplanted to the open in April.

Some Indispensable Perennials.

I WILL mention a few plants that are particularly useful for summer blooming. There are plants that have decorative value in the border beyond their value as flowering subjects, and among these the galega must take high rank.

It has many qualities to recommend it — its foliage is exceedingly distinct and charming; the habit of the plant is

so sturdy and robust that it does not need staking and tying until the flowers are almost ready to expand.

It needs these attentions at this stage, however, as being a July flowering plant heavy thunder showers prove too strong for it when overweighed with its profusion of blossom if neglected. And there is this to be said for it, that though it grows to greater perfection and handsomer proportions under favourable conditions of soil and aspect; yet, at the same time, if we have some terribly over-parched border it will grow there and flower there better than almost any other summer flowering perennial I could name.

It is easy enough to find plants that flower well in such a border so long as they are due to flower during the spring, or even so late as June, but to find plants that will flower with any show of success after that is a difficult matter, when it comes to tall strong growing plants, especially, *G. officinalis* is the best known variety and bears lilac flowers.

I am not going to say that I think an indiscriminate mixture of antirrhinums makes an effective bit of planting because I do not

(Continued on page 130.)



Photo.]

A JANUARY FLOWER.

[G. B. Norrays.

Iris stylosa : which may often be gathered in the snow.

French growers, is about two feet high, and has short pods, containing from 5 to 7 round peas.

Carrots.

Carrots may be forced on hot beds in frames, but the temperature of the bed should not exceed 60 degrees. A bed, two to three feet high, if prepared at once in the usual way, with a layer of light, rich soil, six inches deep on the top of the manure inside the frame, can be watched until the heat has subsided, when the seeds should be sown broadcast and covered with half an inch of soil.

The seedlings must be thinned to about an inch apart, and damp must be guarded against by copious ventilation. The best varieties for the purpose are French Forcing and Scarlet Horn. They should be ready in March or April, when, if properly managed, they make a tender and delicious dish.

Early Cauliflowers.

Early cauliflowers are grown by sowing

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THAT CAN BE GIVEN ANYWHERE BY ANYONE.

The Readings upon "British Wild Life" and the "London Zoo," prepared by Mr. E. KAY ROBINSON, Editor of THE COUNTRY-SIDE, are of a very interesting character. They are issued as pamphlets, price 6d. each (by post 7d.), and can be read at any gathering of old or young, by anybody, whether he or she be a lecturer or not. The readings go with the "British Wild Life" and "Zoo" Lantern Slides, but are not confined to them and form splendid Lectures by themselves. We commend them to all Secretaries of Natural History Societies, Masters of Schools, etc.

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COUPON.

Answers to readers cannot be guaranteed unless three of these coupons be forwarded with each query or specimen for identification. See notice on page 128. Available till January 19th, 1907.

THE GARDEN.

(Continued from page 129.)

neither would I recommend them for border work. But to grow some really well selected colours such as may be had nowadays is a very different matter. "I have made a hobby-flower of them for fifteen years," some one wrote to me not long since, and added, "I hardly know another hardy plant that proves more interesting to grow, to improve, and to experiment with."

Now the colour I have in my mind as especially beautiful in the summer garden is a brilliant rose colour, bright as a penny postage stamp, and entirely self coloured. Last year it was one of the most telling bits of colour in a particularly beautiful garden.

And now I hear that another advance that has been made among the novelties of the coming season is an antirrhinum that has received the name of guinea gold. This, I think, should, if worthy of its name, prove a valuable addition to the white and yellow shades that we already have.

To strike a deeper note here touches a want that has been felt and will add much to the value of the antirrhinum as a garden subject. Where there is any slight heat available seeds may be sown at once. Antirrhinums being perennials that flower the first year, take longer at arriving at their flowering stage than do most of the annual plants; it is advisable therefore to get them started as early as possible.

Another perennial that well deserves the title indispensable is *Veronica subsessilis*. I was at Kew one year at the height of the veronica season and among the many varieties this grand Japanese variety stood out from the rest as the showiest, the best of all. The deep blue is valuable indeed as a bit of brilliant colour in the August garden. Don't starve this plant, don't smother and choke it with other subjects in too close proximity. It is worthy of good cultivation and an open position.

F. M. WELLS.

Snow in the Garden.

SNOW is the gardener's friend. He does not always realise this; it spoils his paths, stops soil work, and makes a mess generally. But that soft, light, white layer, four inches thick in some parts, twelve inches in others, which covered the whole country in Christmas week, served as a blanket, softened and washed the faces of the plants, and, as it gradually melted, it soaked into the soil, finding its way far deeper down than any rain flood ever does.

The rain is apt to be wasted so far as the soil is concerned by running down slopes and into surface drains, where it helps to swell the river instead of soaking through the soil.

Then there is good plant food in snow. It is probable that the health of alpine plants generally is largely due to the help they get from the snow blanket which covers them in winter, shielding them from the frost and then gradually melting to water, and feeding them as they wake into fresh growth in spring.

Four inches of snow kept out the 15 degrees of frost on the first night and the 12 degrees on the second that we experienced after the snow came, and although the ice on the pond was $\frac{1}{4}$ inch thick the turf and flower-bed beneath the snow were unfrozen. But a gardener friend would not believe this until the snow had been removed to prove it. We fail with many plants in England because we do not get help from the snow in winter.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

GREAT YELLOWSHANK shot in the Scilly Isles.—*Liverpool Echo*, December 11th.

BITTERN: Fine male shot December 24th in S.E. Essex.—(E. Jukes.)

EAGLE shot during first week in December at Upper Warlingham, Surrey.—(F. M. Heward.)

LITTLE OWL shot near Ely lately—(H. Gautrey.)

GREYHEN shot at Watford, Herts (stated to be first example in the county).

WHINCHAT seen at Erdington, near Birmingham, on December 13th, while snow was on the ground.—(J. C. Real.)

BRAMBLING: One taken at sea during recent severe weather from the north off the Norfolk coast.—(E. K. R.)

ROUGH-LEGGED BUZZARD seen on Pentland Hills, Midlothian, December 28th (A. Urquhart and R. B. Whyte); Quorn and Loughborough, Leics.—(G. F.)

HOUSE-MARTINS: Two tired birds seen at Helston, Cornwall, December 18th; wind, S.W.—(T. J. Roscollar.)

BEWICK'S SWANS: Six on the reservoir, Quorn, Leics.—(G. F.)

ROBIN'S nest containing three eggs, shortly expected to hatch, found during Christmas week at Hever, Kent.—(Rev. D. Smith.)

BLACKBIRD'S in pairs at Edenbridge, Kent, during Christmas week.—(Rev. D. Smith.)

London Notes.

MAGPIES returned to the Green Park before Christmas, and repairing their nest.—(C. D. Forbes.) CHAFFINCH in Denman Street, London Bridge, on December 27th.—(E. F.) WOODCOCK on Putney Heath, December 30th.—(W. H. Smith.) PERWIT in St. James's Park, December 26th.—(W. J. G.)

Marked Birds.

BLACKBIRD with right wing entirely white and left wing partly so, on December 5th at Manchester (E. V. P. Simpson); cock with left wing pure white, November 29th, at Occold, near Eye, Suffolk (H. C. Rowling); cock with greater part of bill missing caught at Burton-on-Trent, December 27th (B. Pattinson); cock with white tail, December 22nd, near Chelmsford.—(W. Wright.) ROOK with two outer feathers in right wing and one in left wing white, December 15th, at St. Leonard's, Sussex.—(J. R. Harding.) ROBIN with white bar on tail at Manchester on December 1st.—(C. V. P. Simpson.)

HERALD MOTH, December 18th, near Burton-on-Trent, Staffordshire.—(B. Pattinson.) SMALL TORTOISESHELL, December 17th, at Marlborough, Wilts.—(J. B. Baker.) PEACOCK, December 9th, near Huntingdon.—(M. Cuffing.)

Wild Plants.

HOLLY in bloom, on December 21st, at Swansea.—(G. S. Arthurs and H. R. Wakefield.) OXEYE DAISY in bloom, December 4th. GREATER STITCHWORT, December 7th, at Pulborough, Sussex.—(P. R. Prescott.) RED CAMPION in bloom on December 23rd near Swansea, S. Wales.—(H. R. Wakefield.) STRAWBERRIES: Large unripe fruit at Liscard, Ches., on December 18th.—(A. E. Davey.) WILD STRAWBERRIES, in blossom and fruit on December 8th at Pembroke, S. Wales.—(A. John.) BUTTERCUPS in full bloom since December 5th, at Aberdare, Glamorganshire.—(D. O. Jenkins.) NOTTINGHAM CATCHFLY found on December 18th near Beer, Devon.—(K. North-Row.) MUSHROOMS gathered on December 2nd at Nunthorpe, Yorks.—(S. Cook.)

A Curious Coincidence is reported in "Bird Notes" for December. After a blustering storm in November, 1905, two cock chaffinches sought shelter at a lighted window; and the incident was narrated at the time in "Bird Notes"; but the surprise of the narrator may be imagined when in November, 1906, after a similar storm, two cock chaffinches again sought shelter at the same window.

"DAILY MAIL."

The Naturalist's Daily Newspaper.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 88. VOL. 4.

JANUARY 19, 1907.

1d. WEEKLY.

The Beauty of Frost.

WE have illustrated during this winter various beautiful effects produced by frost.

On pages 103 and 115 different kinds of spider webs were shown, transformed by hoar frost into veils of silver filagree. On page 107 the quaint forms which moving waters assume when caught by ice, hanging in fringes of hoary icicles from a dripping spring or spreading in snowy sheets where the vapour of a waterfall froze as it rose. Again we showed on page 11 how the freaks of frost converted a bare branch of a common snowball bush into the semblance of a choice white heath; on page 123 how delicately the margins of barberry leaves are traced by hoar frost; and on page 127 the bolder pattern which the sinuous, spiny leaves of holly make.

Yet again in the "Week's Wild Life" of this issue is shown the complete transformation of a privet bush under winter's fairy wand; and here are four examples of the same magic work on window panes.

One thought which these truly wonderful devices must suggest to many minds is how very cautious we should be in trying to find reasons for the beauty which we see around us in living nature. The lovely markings, for instance, upon the petals of flowers are often quoted as evidence of the æsthetic tastes of insects; so are the fanciful designs upon the wings of butterflies. Yet we have good reason to doubt whether the eyes of insects ever

view, much more whether they admire, these things; and the surpassing elegance of the frost upon the window panes, as well as the very similar patterns produced by many chemicals in crystallising, show that there is no need to invoke an æsthetic

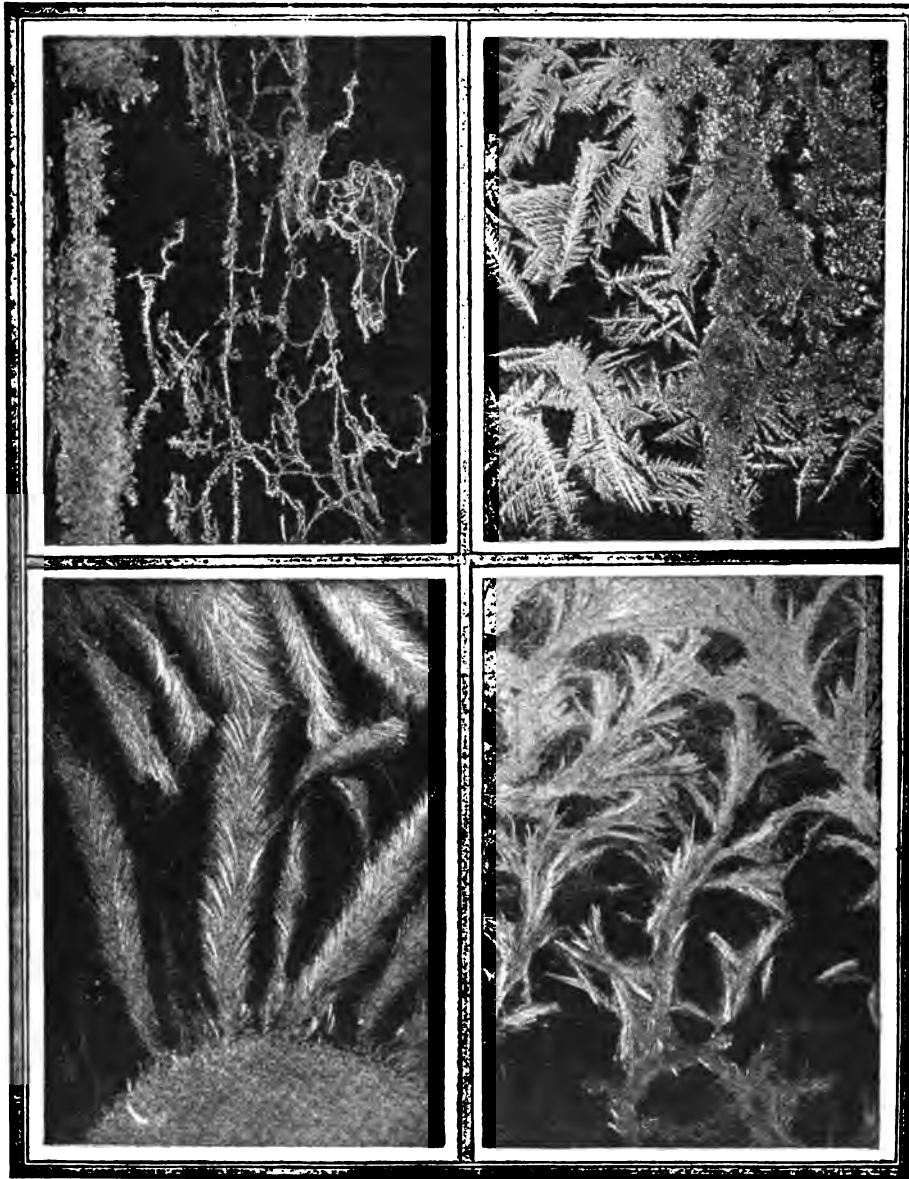
pleasant associations of ancestral ideas; and we see grace and beauty in whatever suggests the forms and patterns that awaken such associations.

Yet shapes and patterns in nature are almost always based upon methods of growth which follow stereotyped rules. The shape of every leaf, as well as every sound or colour or odour in nature has its simple utilitarian origin, and whether we happen to think it beautiful or not makes no difference.

These patterns of ice upon our window panes, for instance, result simply from the tendency of hoar frost to form minute six-pointed crystals on whatever points of a chilled surface radiation of heat is proceeding more rapidly than it can be restored from the surrounding air.

Thus, when the temperature without falls, the glass gives off its heat more quickly than the air of a chilly room can replace it; and crystals of ice form and run on into streaks and feathery patterns along the lines of the greatest cold, this probably depending upon the minute movements of the air adjoining the glass, these movements having been themselves caused by the formation of the earlier crystals.

In fact, just as sudden falls of temperature in winter are often accompanied by freezing storms and blizzards, so we may imagine infinitesimal tempests sweeping and curling over the smooth surface of the glass, causing ice to form in microscopic reefs and drifts.



[Koles.]

[G. Parkin.]

Varied and beautiful forms of Hoar Frost, frequently to be seen upon window panes at this time of the year.

sense as the cause of everything which happens to seem beautiful to us.

For our own æsthetic sense, we must remember, is derived from viewing nature. In the songs of birds, the colours of butterflies, and the perfumes of flowers we find

Country-Side Notes.

Warham, Norfolk.

Wherever life is progressive, as all life was intended to be, every change must needs be marked with something new, and relatively more beautiful than any event or state that has yet been registered.

—LEO H. GRINDON.

THIS has been a rather remarkable winter for solar halos—which are like rainbows in colour, but differ from them in two important respects. Firstly, they are seen when there is no rain in the air; and, secondly, whereas you turn your back on the sun to see a rainbow, these coloured halos are round the sun. You do not always, however, see the complete bow. More often only the two ends of the halo are visible, appearing like two upright rainbow-hued pillars on each side of the sun at a distance of about 22 degrees from it.

What this distance of 22 degrees means is easily explained. The whole circle of the sky that you see if you turn round on your heels—or, indeed, any complete circle—consists of 360 degrees. If, then, you stand still, facing the sun, and stretch your arms straight out, you divide the whole circle into equal halves, of 180 degrees each. Next, by keeping one arm still stretched out and pointing the other straight at the sun, you divide the half-circle into a segment of 90 degrees; and 22 degrees is very nearly a quarter of this. So you can easily guess about how near to the sun this halo would be. A second, fainter halo, sometimes appears, at double the distance (or about 46 degrees); but this is much less often noticed.

But you must not confuse these real halos with the coloured rings that often appear round the sun or moon, when either of these is shining through thin clouds or mist. These are called "coronæ"; and they are produced by the *diffraction* of light passing through drops of moisture, whereas the halos are the result of the *refraction* of light from particles of ice in the air. They can easily be distinguished, because in the halo the red is nearest the sun, whereas in the corona the blue is the nearest.

At the same time as the halos, "parhelic circles" have been well observed this winter. These are white circles which pass through the sun and are intensified at points on each side of it at the same distance as the halos, forming bright spots like miniature suns. A reader, Mr. A. Quatremain, Malvern, thus describes the double phenomenon, observed by him on January 4th:—"While on the Malvern Hills to-day I noticed a large circle round the sun. It was of the same colours as a rainbow, only not quite so bright, and at each side of the circle was a light like a miniature sun. It appeared at its best at about 2.30 p.m." Similar appearances are recorded by other readers in Devonshire; and I saw a partial halo myself in Norfolk in December at about 3.30 p.m., just before a sharp frost, which was followed by a sudden thaw. It is no doubt due to the remarkable atmospheric

changes of the passing winter that the frequency of these beautiful phenomena has been due.

Some readers have thought that the interesting article which we published last week on "The Moral Nature of Birds," by Mr. Frank Finn, conflicts with the teaching that all actions of creatures other than man are guided by instinct. Thus Mr. Finn's text, "That virtue and vice have their roots far below humanity and that among our fellow-creatures in feathers may be found the same moral phenomena as among ourselves," may seem incompatible with belief that ideas of right and wrong, or happiness and unhappiness, exist in the mind of man alone. But there is no real contradiction, because Mr. Finn does not suggest that, when a duck or a parrot performs an action which seems good or bad to us, the bird is conscious of its own "virtue" or "vice."

It is only our lack of knowledge of previous facts in evolution which leaves us unable to explain why one kind of creature appears more virtuous than another, according to human ideas, and why some individual birds or beasts seem to have "better" or "worse" characters than others of the same kind. On the other hand, we do sometimes possess enough knowledge of previous facts to explain such things. Thus, in so far as the common domestic duck, quoted by Mr. Finn, is a bad mother, although descended from the mallard, whose wife is always a good mother, we may safely regard it as the result (rather than the cause) of the common practice of entrusting ducks' eggs to hens. For many generations we have bred our ducks from individuals which have not been permitted to act as mothers. It is therefore natural that their maternal instinct should have become weak, although very often you come across individual ducks which "throw back" to the mallard in this particular, and, as Mr. Finn notices, make devoted mothers.

We may, if we like, adopt the view that such a duck exhibits conspicuous "virtue," and that a budgerigar which kills her neighbour's newly-hatched infants shows "vice," so long as we do not suppose that the duck regards herself as a model to her sex or that the budgerigar feels that her actions are criminal. In other words, we may admit that animals have what we call "good" or "bad moral natures" and exhibit "virtue" or "vice," from the human point of view, but we must deny that they can take the human point of view of their conduct and feel happy or unhappy in consequence. Of course, if we use the words "moral character," or "virtue" and "vice" as implying consciousness thereof, then we must deny their possession to all but human beings.

Indeed, having abundant experience of the ease with which one can make oneself misunderstood, I would avoid the use of such words in connection with animals other than man. Mr. Finn, however, who uses them in a wider connection, would,

I am sure, not wish to be understood as implying that a bird which he regards as the possessor of a "bad moral character" and the exhibitor of "vice," is morally reprehensible in the human sense. He would not, for instance, consider a budgerigar which murders its neighbour's children as *deserving* of death, or—if he disapproves of capital punishment—of penal servitude.

Whatever words we may use, we all ought to observe this clear line which divides the conduct of animals from that of man—namely, that the animal cannot regard its own conduct from man's self-conscious point of view. Therefore those men who punish a horse or a dog, etc., *in anger*, commit a great wrong. It is our privilege to possess other animals and to train them to our service; for which purpose we endeavour to develop those instincts which are useful and to suppress those which are injurious to our interests. In this we meet with great success in the case of such animals as dogs and horses, which, as gregarious animals, naturally possess some original instinct of obedience and social loyalty. But to beat a dog or a horse *in anger*, because we have not brought its instincts under complete control, is both wrong and foolish, as overlooking the wide difference between "punishment" which no lower animal can deserve and the "correction" which man may, in his own interest or that of his neighbour's, rightly apply to his own property.

We have, for instance, seen some painful accounts of the chastisement of foxhounds, and in so far as the officials concerned acted in anger, their conduct was wrong from the human (as well as the humane) point of view. On the other hand, an uncorrected foxhound will on another occasion lead the pack astray to chase a flock of sheep, and at this time of year immense loss of life would result among the ewes and their unborn lambs. If, then, fox-hunting and farming are to go on side by side it is the plain duty of the officials connected with the former to make such an example of any young hound, which leads others astray after sheep, etc., as to stamp out all tendency in the pack to run riot. But it is "correction" and not "punishment" which should be administered. However severe the treatment, it should be delivered as by a person, or his agent, desirous of improving valuable property; not, as is too often the case, in ignorant, uncontrolled anger. When a man is angry with an animal, he unconsciously returns to the animal's level, and acts without humanity—which is the likeness of God in beings who would otherwise be mere animals still.

In partial connection with this subject of the difference between men and other animals, there is a good deal of correspondence just now on such subjects as "The New Darwinism," "Was Darwin Wrong?" and so on, suggesting that the theory of Natural Selection, as Darwin gave it to us, is played out. But there seems to be the same mistake underlying

the arguments of all the writers who assail Darwin's doctrines. They discover that creatures can to a certain extent adapt themselves to their surroundings; and they declare that it is by this power of adaptation and not by Natural Selection that evolution works. What they fail to recognise is that the power of adaptation is itself merely a result of Natural Selection.

I admit that "Natural Selection" was not a happy phrase to be coupled with "sexual selection" in describing the two processes by which nature works. In sexual selection one sex chooses its mate from among the other sex by following its inherited tendency. Thus the daughter inherits the mother's, grandmother's, etc., etc., tendency to admire a certain characteristic, thus exaggerating that characteristic in the male sex, generation after generation. This is properly described as "Sexual Selection," because it is the choice made by one sex from the other. One mate is accepted, and rival suitors are left.

But the process which Darwin called "Natural Selection" is an entirely different means of arriving at a somewhat similar result, and I should much prefer to call it "Natural Elimination." It comes into operation so soon as a new generation is produced, whether in the shape of seeds, spores, eggs, or young. From the moment of their production, nature—by which we must understand in each case all the conditions of weather and climate, all the activities of natural enemies, all the forces of accident and misadventure, and, worse sometimes than any, all the competition of stronger members of their own kind, and especially of their own sex—begins to eliminate those which cannot survive the multiplied ordeal. Thus it is not, as in the process of Sexual Selection, that one is chosen and the others left. Instead, it is that the others are eliminated and one is left. And this one which has survived the ordeal of elimination of the unfit to live becomes one of many competitors in the other ordeal—the sexual selection of the fittest to reproduce their kind.

Now, it is no newly discovered process of evolution, much less is it antagonistic to Natural Selection, that creatures, whether animal or vegetable, exhibit a power of gradually adapting themselves to their environment. If it appears new to some—as would indeed seem to be the case, from the amount of printer's ink which is being expended upon its promulgation—this can only be because they have not followed for themselves the straight line of Darwin's argument. For a little consideration should suffice to convince everyone that, as the direct result of Natural Selection, a universal characteristic—perhaps the only characteristic which is universal in all creatures, whether animal or vegetable—must be this power of adaptation to environment. We have only to look at human life around us to see that the faculty of adaptation is the first essential to survival in the struggle of existence. Every kind of living thing has similarly acquired it by means of "Natural Selection." It is the most natural result of that process.

In a recent issue I rather authoritatively corrected a correspondent's belief that a chaffinch walks instead of hopping, by asserting that it hops like other finches. Daily observation since has confirmed this. Never have I seen a chaffinch walk, but always hop—not with such a bouncing, straightforward hop as the sparrow's, except when in a hurry, but always a distinct movement of both feet. The following three correspondents, however, aver that I am partly wrong, and that the chaffinch *does* walk upon occasion. One, writing from Essex, describes its gait as a sort of shuffle, midway between a walk and a hop. Another, from Bournemouth, says that on December 27th he distinctly saw a chaffinch walk more than a yard, but on the following day, "when the roads were frozen and food scant," some dozens that he watched only hopped. The third, from South Croydon, says that chaffinches both walk and hop, and that on January 2nd he saw one walk more than eight yards, "placing one foot before the other just as a wagtail does."

Now, I should very much like to know if readers in other parts of the country ever see a chaffinch walk. It is not a question to answer from memory; because the chaffinch's gait, even when hopping, is so smooth, and, as it were, gliding, as to appear markedly different from the sparrow's hopping progression. Unless, too, you are near enough to see the bird's feet, the evenness of its motion suggests that it does not hop. What I want to know is in what counties, after this date, chaffinches will actually be seen walking instead of hopping.

The interest of the question is twofold. In the first place, bird-fanciers claim to be able to tell from what part of the country a chaffinch comes by its song; and, secondly, it has been suggested that there are really two kinds of chaffinches in England, making different types of nests and laying different types of eggs. Now, we know that the purple-and-green headed starling from Eastern Europe appears to have driven the old green-headed English starling to the West of England; and as multitudes of foreign chaffinches come over to us every autumn, it is quite possible that a foreign form of chaffinch, more clever than our own, is establishing itself in the south-east of the country.

This might not only account for the alleged differences of song and variant types of nests and eggs; but also for the fact that readers in Essex, Surrey, and Hampshire see chaffinches that walk. For the cleverness which gives aliens from the east the advantage over our birds enables them to adapt themselves better to novel circumstances; and one new rôle which the chaffinch—by nature a seed-eating bird—plays very persistently is that of fly-catcher round the margins of ponds, etc., in summer. We know that the walking gait of the wagtail is specially useful for the purpose of turning swiftly to this side or that in pursuit of insects; and it may very well be that, in adopting the wagtail's habits, the more progressive chaffinches are adopting its gait also; and if chaffinches that walk are confined to the south-east of England, the fact would be most interesting.

Quite a number of readers have sent me answers to the question "What would come up?" if you planted the electric bulbs advertised in a country paper under the head of "Gardening." There is, however, little scope for ingenuity in the question, because, with the exception of single guesses of "globe" flower, "glow" worms, and a "shock" of corn, all the answers have something to do with "currants" (currants), the best of all, perhaps, being the answer, "a crop of shocking currants."

E. Kay Robinson.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

BUZZARD shot near Spalding in December (L. M. Curtis); another shot at Upper Dovercourt, Essex, January 2nd.—("K.")

CORMORANT shot near Holbech, Lincs., December 26th.—(L. M. Curtis.)

LITTLE GREBE: A flock was delayed at Henley-on-Thames during fog at night, December 20th.—(W. J. Street.)

BRAMBLINGS in such large flocks that they darkened the air in flight, near Polmont Station, N.B. (E. W. Gray); at Aldershot brambblings have freely joined greenfinches and chaffinches at the bird-table.—(F. G.)

GOLDCRESTS: A flock seen on December 15th at Guildford, Surrey, after cold northerly winds.—(A. M. Smallpeice.)

REDWINGS, THRUSHES, STARLINGS, FIELDFARES, LARKS, etc., passing in vast host for hours towards strip about Land's End before storm and frost, at St. Ives Bay, December 28th-29th.—(G. A. B. Dewar.)

STARLINGS and MISSEL THRUSHES again passing over Brighton to the N.W. in great numbers on the morning of December 28th. Wind N.—(S. Biddle.)

SONGTHRUSH feeding with sparrows in one of the busiest streets in the centre of Liverpool, December 28th.—(John Lamb.)

Marked Birds.

ROOK shot at Chadderton, near Oldham, with ring round leg marked R.P.S., 1904, 4410. Is any reader able to say when and where this ring was put on bird?—(S. G. Halbert.) JACKDAW with black face, white head, and spotted back, at Aberdare, December 22nd.—(D. O. Jenkins.)

London Notes.

BRAMBLING feeding in roadway with sparrows in Church Lane, Hornsey, January 1st.—(G. Brasier.) BLACKHEADED GULL in St. James's Park, already wearing the complete dark hood of the breeding season, December 27th.—(J. R. Harding.)

HOLLY.—From various parts of the country this has been reported as in bloom in Christmas week.

When Evening Came.

(Rondeau.)

When evening came with soft caress
Of gold-plumed wings, outstretched to bless
The rain-swept wintry solitude
(Where, tall and stark, within the wood
The trees draw close for loneliness),
We felt a lull in storm and stress,
Whilst peace, that words can scarce express,
Sank down upon the scene we viewed
When evening came.

Perchance when Death doth dispossess
This frame of breath, we shall confess
How once we doubted God was good
Until that glimpse, half-understood,
Of glory robing grey distress

When evening came.

MAUD E. WORSFOLD.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Feeding Birds.—Greenfinches come to sunflower seeds better than to any other food. Small bird seeds sold as "linnet" or "finch mixture" are appreciated by chaffinches more than soft food. Thrushes seem to like best dog-biscuit crumbs (the smallest broken dog-biscuit sold) soaked in warm water till fairly soft.—F. GIBSON, Aldershot.

Bee Superstitions.—Besides "warning the bees" when a death occurs in the house, the following practices are mentioned in "The Life of R. S. Hawkes":—"If anyone dies someone takes a shovel and lifts up the hives of bees from their stands when the corpse is being carried from the house, or they tie a piece of crape around each hive; otherwise, they tell you, the bees would die; or if the dead person had a favourite plant in the window, that must have crape tied round the pot or it will die.—E. M. WOOLDRIDGE.

Birds' Pellets.—Members of the crow family, especially rooks, cast up pellets or indigestible matter, and in the breeding season these pellets are scattered all over the ground under the rookery. Not only do birds cast up indigestible matter, but some, as the pigeon, who is a well-known glutton, eat far more than they need, and later on, when roosting, cast up the superfluous food in such quantities that I have seen the ground sprinkled thickly with these pellets in a wood where the pigeons were roosting. The pellets on examination proved to be composed entirely of turnips which the pigeons had got in a field where I had seen them earlier in the day.—H. E. SHORTT, Inverness.

The following note is copied from my N.H. diary:—1891, January 30th. Every morning during the frost I have fed a robin at bottom of the garden. This morning the bird seemed unable to feed until it had cast up a pellet, formed of the skin of a large grub, the outer parts of a beetle, and bits of hay. I think this habit of the robin is mentioned by Morris in his "British Birds."—J. H. PAYNE, Rotherham.

Scentless Violets.—Is the writer of this paragraph on p. 110 quite sure that the plants in question were those of the sweet violet? Is it possible that the plants were *V. hirta*, which is closely allied to *V. odorata*, being by some authorities even considered merely a variety of it? The flowers of *V. hirta* are often as large as those of *V. odorata*, and nearly as variable in shape and colour. This plant is usually found in dry, especially chalky places. Sweet violets are supposed to commence flowering in March, but all the common species of violet may be found in flower in April; much depends on locality and surrounding conditions. The best distinction between the sweet violet and the other common blue ones, apart from the scent of the former, is that it has the sepals (the outer green leaves of the flower) obtuse (blunt at the ends), while those of the other species are acute or pointed. Personally, I have never heard of scentless specimens of the sweet violet and see no reason why late flowers should be so.—C. NICHOLSON, Chingford.

Nesting Boxes for Birds.—A few months ago an article appeared in COUNTRY-SIDE on nest pots for birds. In the event of the earthenware pots referred to being thought unsightly or expensive, the following method of making boxes will be found inexpensive and effective. Procure a piece of perforated zinc, bend it in any shape required and plaster the whole with mortar. The mortar will

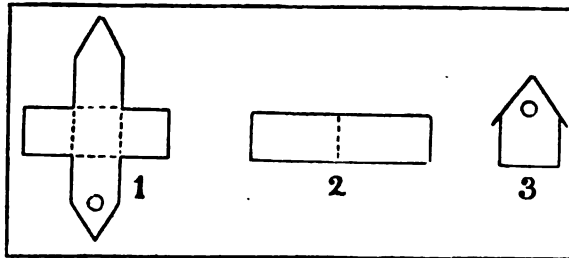
of playing hide and seek with the cat in the garden. Thomas sometimes sleeps on the pig's hutch, and one night he fell in, but this did not worry him. He and his smaller companion simply rearranged themselves and curling up together, slept thus for the night.—W. LAWRENCE, Hanwell, W.

Small Shells Turned the Wrong Way.—It would be interesting to hear from collectors of land shells how many specimens of "left-handed" snail shells they have found. I devoted much spare time for over twenty years to collecting the land and freshwater mollusca of this neighbourhood, and out of the thousands of the commoner species I have handled in that time I have only one left-handed one in my possession, and that, curiously enough, was found by one of my boys while "following in his father's footsteps."—JAMES C. BLACKSHAW, Penn Road, Wolverhampton.

The Castor Oil Plant.—Perhaps it will be of interest to your readers to know that a plant of castor oil in our possession for twenty years has flowered annually for at least six years. It is in a big tub of soil, but is seldom watered, and is kept in a room that hardly ever has a fire and is in consequence very damp and cold in winter. The plant has often been cut down. It first flowered a year or two after the last cutting down.—J. D. DUNN. [Castor oil or Palma Christi forms an evergreen bush or small tree in tropical countries. Originally African, it is now widely distributed and naturalised in the tropics generally. It is cultivated in India for the sake of its seeds, that country supplying most of the castor oil of commerce, which in addition to its medicinal uses is also used in some countries as a lamp oil. It is said to have been used in Egypt 4,000 years ago.—Ed.]

An All-British Garden.—Many of the plants mentioned under this heading on page 57 are very difficult to obtain in a wild state, even if it be granted that some of them are truly wild, which is exceedingly doubtful—the snowdrop and snowflake, for instance. And where can one find the native gladiolus and carnation in sufficient abundance to excuse the taking of a plant or two? The writer of the article, nevertheless, deserves the hearty thanks of all who want something better than the stereotyped arrangements of the few plants used by ordinary gardeners.—C. NICHOLSON, Chingford.

Is Nature Cruel?—M. L. A. (page 100) may safely rest assured that nature is not cruel. Cruelty is a term purely relative and can only exist as such among creatures capable of distinguishing between good and evil ethically. The only creature so capable is man, who conceitedly views everything from his own limited and entirely inadequate standpoint and praises or condemns accordingly. "Nature red in tooth and claw" is correct enough, but there is no cruelty to be inferred from that. Strife there is in nature, but that does not necessitate suffering. Our editor has admirably dealt with these matters in the early days of this paper.—C. NICHOLSON, Chingford.



How to make a Nesting Box.

By means of these diagrams and the explanatory note you will be able to construct your own boxes.

"key," as the builders call it, through the holes and when dry the box will be found thoroughly watertight and will last for years. For a nest box for tits take a piece of perforated zinc the size of a page of COUNTRY-SIDE, fold it in a cone (fasten with wire to keep it in shape), leaving an opening of about two inches at the smaller end, then plaster the whole with mortar. This box will not require a back if it is hung on a wall or building, but if for a tree, a piece of zinc should be wired at the back. The boxes can easily be suspended by passing a wire through the sides, or when the box is without a back it can be hung on a nail. To make a square box cut the zinc in the shape of No. 1 and bend up at dotted lines. Cut a rectangular piece (No. 2) and bend over top to form the roof, fasten in one or two places with wire, and plaster the whole with mortar. The perforated zinc is easily cut with an old pair of scissors. These boxes are not unsightly; they are easy to make, cost next to nothing, and the birds take to them readily.—D.

Strange Playmates.—The cat and the guinea pig shown in the accompanying photograph



Photo.]

[W. Lawrence.

Strange Playmates.

This cat and Dutch guinea pig are very fond of playing hide and seek together.

belong to Miss Fyfield, of Thatcham, Berkshire, and are on excellent terms with one another. The guinea pig is of Dutch breed and is six years old, and he seems very fond

How Feathers Wear.—Mention has been made of the notches to be seen in some of the curlew's feathers. The other day I picked up a dead hen kestrel. At the tip of two of the tail feathers the white was worn away, producing a somewhat peculiar effect, as of pin-tipped feathers.—G. E. JOHNSON, Shrewsbury.

"Deferred Moths."—It has been suggested (Tutt's "British Lepidoptera," Vol. II., page 516) that in the case of the small egga (*Lachneis lanestris*) the pupæ enveloped in cocoons exceptionally difficult of penetration by the vivifying action of the air were those that lay over for two, three, or even as many as eight years before emerging. This seems a plausible theory and could, probably, be tested.—C. NICHOLSON, Chingford.

"Was Darwin Wrong?"—The letter which you published in your issue of December 15th from the Rev. J. Gurnhill raises a question of the greatest importance. J. Scouller in "Darwinian Fallacies" raises several objections to Darwin's theory of evolution which seem to be unanswerable. It is pointed out that when Huxley carried "the evolutionary process to the primordial undifferentiated protoplasm he most certainly gave the coup de grace to that theory in its entirety." For it is surely evident that in the primordial undifferentiated protoplasm there could be no variation whatever* to be propagated by natural selection, nor could there be any struggle for existence to constitute an active principle in selective process. A careful study of the "Origin of Species" will soon show, however, that the facts there brought forward are quite consistent with the principle of design in nature, or even with that of a separate creation for each species. Professor Huxley himself said, "All new truths begin as heresies and end as superstitions."—H. W. D. HOLDER, Oxted, Surrey.

[*I do not think that this is evident. I am of opinion that evolution must have been active at least so soon as the waters on the earth were being gathered into seas, owing to the constantly-changing conditions between high and low water marks. It was probably there that protoplasm first took varying shape.—Ed.]

Foreknowledge of Storms.—I have been predicting gales of wind lately. When one comes add 28 days, and there will be another, sometimes one or two days previously. This, the theory attributed to Captain Jinman, seems the necessary result of a spotted sun turning on its axis, and it is so reliable that it deserves to be widely known.—A. H. SWINTON, Totnes, Devon.

How Bees are Killed.—The question asked in the issue of December 8th, if it were a fact that bees died in the Isle of Wight last year, has brought to my mind a conversation I had (when travelling from Cork a few weeks ago) with an English gentleman, a chemical manure manufacturer. I remarked incidentally that honey had been scarce in south-west Cork for the past few years, and he at once told me that the spraying of potatoes, which is done very extensively here, by sulphate of copper, has been the destruction of bees to a great extent wherever it is used. If they spray potatoes in the Isle of Wight in any quantity the above might explain the matter. He also stated that, with others, he is watch-

ing the effect of this spraying on the life of other insects, and fears it may have a bad effect on many kinds on which the fertilisation of plants depends.—F. R. ROYCUILL, Skibbereen, Co. Cork.

Useful Colouring.—These interesting photographs of brown owls illustrate well the contrast between the underside and the upperside of the plumage of almost all birds of prey. It will be seen that all the markings of the upper surface are comparatively obscure, while from below both the wings and bodies are distinctly marked with dark bars and streaks on a pale ground. That there must be some reason for this contrast goes without saying; and since it is to be found in the plumage of most birds of prey, we naturally look for the explanation in the habits of these

the window-panes, and, watching it closely for some time, I came to the conclusion that the peculiar singing noise was made by its very tiny second pair of wings, which vibrated so rapidly, and within such small compass, as to appear motionless, the insect remaining stationary meanwhile. The sound was interrupted when the fly was rubbing the back of its head and along its wings with its fore and hind legs respectively. The reason for thus moving the small wings is, however, still a mystery to me.—C. M. S. GRANT, Dunblane, Perthshire.

Syrphus, when apparently at rest, is always keeping up a vibration of the wings (you must employ a lens to detect it), and when this ceases the sound ceases. The idea advanced by Dr. H. Landois in his pamphlet, "Die Ton und Stimmapparate der Insecten" is that the sound results from the air passing out of the breathing holes under the wings, that are furnished with laminae, when the muscles vibrate the wings—this as it may be.—A. H. SWINTON, Totnes, Devon.

Gulls and Eiders.—Mr. Simpson, in his interesting article referring to gulls robbing ducks, says:—"In this gulls are often successful, even with larger ducks." This is not my experience with eiders, for these fine ducks will almost invariably dive again when swooped at by a gull. Eider ducks, when on the feed, are always moving, either up or down the coast. Gulls are not long in finding this out, and will often fly twenty or thirty yards ahead of where a duck last dived, in order to be as close as possible when it rises again.—A. D. HOPKINSON, Stonehaven, N.B. [Does not this rather show that the gulls must often be successful in robbing the eiders? Unless they gained something by it, they would not make a practice of attending them.—Ed.]

The Work of the Ivy.—Is it not the method by which the ivy injures trees and buildings rather than the fact that it does so that is questioned by many people? It has been urged that it extracts nourishment from the tree through the root-like processes by which it clings, thus acting like a true parasite. This is, however, generally conceded to be an error*, because it has true roots, which draw the necessary food from the soil. I think there is little doubt that the elm, pictured on page 52, is simply being suffocated by the huge masses of ivy preventing light and air from reaching the leaves.—C. NICHOLSON, Chingford. [*I think that the ivy

by means of the rootlike processes by which it clings, robs the tree of the nourishment which would otherwise be carried down the branches and stem to the roots by rain. That the ivy takes nourishment through these rootlike processes is shown, I think, by the fact that large ivy plants on a building will continue to bear green leaves for years after their stems have been cut through.—Ed.]

Erratum.—In "Country-Side Notes" of December 29th, among the insects to be found at this season, "herald worms" was, of course, a misprint for "herald moths"; and the suggestion that water creatures to be despatched alive to friends at a distance should be "perched" in moist waterweeds should have been "packed."



Photo.]

[G. B. Norreys.

Plumage of Brown Owl, above and below.

All the markings of the upper surface are comparatively obscure, while below both the wings and bodies are distinctly marked.

birds. At first sight, the strikingly-marked underside might seem out of place, because when a bird of prey flies overhead its intended victims see that side, if any. One might have supposed, therefore, that a dull uniform tint below would have aided the bird's concealment from its quarry. But, recollecting how hunters have found that the conspicuously-striped colouring of the zebra tends to make it invisible on the open plain, we need have little doubt that this is the meaning of the barred and streaked markings of birds of prey below.—Ed.

Singing of Hoverer Fly.—Referring to your issue of December 29th, regarding the Hoverer Fly, my attention was drawn to one of these insects last summer crawling about

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, JANUARY 19, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

The Wild Cat in Scotland.

By C. J. H. CASSELS.

IT is well known to naturalists that the wild cat (*Felis catus*) is still to be found in several parts of the Scottish Highlands. Owing, however, to the exigencies of game preservation, its early extermination in "the land of the mountain and the flood" appears to be as certain as the fact that it is now totally extinct in all the rural districts of England.

At one time it existed in both countries. The late Reverend H. A. Macpherson, M.A., vicar of Allonby, Cumberland, author of "The Vertebrate Fauna of Lakeland," writes under Carnivora in that work (1892), that "it is now practically extinct" in the lake district, probably the locality where it lingered longest in England. Other authorities of high standing agree as to its disappearance long since from that country, as well as from Wales, whilst in Ireland, despite certain published "discoveries" there, no satisfactory evidence is forthcoming of its ever having occurred at all.

That eminent naturalist, Dr. R. F. Scharff, M.R.I.A., curator of the Dublin Museum, in this connection is of opinion that a wild cat identical with the African one (*Felis ocreata*, synonymous with *F. caligata*, *F. maniculata*, etc.), and quite distinct from the one found in Scotland at present, not having a bushy tail, indubitably lived in Ireland until recent times, and may still be found in some of the more remote districts.

To the careful observer there can be no possible doubt as to the identity of the thoroughbred, *Felis catus*. Let us look for a little at its most clearly defined features. First to be mentioned as an indisputable one is the tail. This is notably long, very bushy, and, unlike the domestic cat's, uniform in thickness. In males it is usually of a shorter length than in females. A second sign is the great length and strength of the limbs.

Another characteristic is the colour, which never varies like that of *Felis domestica*. This is of a dark grey brindled on the belly and flanks with stripes of brown. Other features are the quadruped's great weight (averaging 20 lbs.), width of head, long and rough hair, short ears, very large tusks, and general appearance of strength and ferocity.

The wild cat in Scotland generally lives in the most inaccessible mountain fastnesses, and may sometimes be found in woodland districts. Excepting through stress of very severe weather, it seldom wanders far from its remote retreat. Of carnivorous habits, few items of diet to be procured within the area of its haunts come amiss to its palate. Thus, as opportunity offers, its bill of fare is varied with such delicacies as young rabbits, grouse, wild duck, black game, hares, etc. Even lamb when in season falls a prey to its poaching proclivities.

Being nocturnal by nature, and prowling mostly at night, it is responsible for dreadful depredations in game districts, and is, accordingly, the sworn foe of gamekeepers. Though never seeking to attack man, when at bay it will wage war with the ferocity of a tiger.

"I never saw an animal fight so desperately, or one which

was so difficult to kill," says Mr. Charles St. John in "Wild Sports of the Highlands," and, as might be expected in such a fierce animal, the maternal instinct is so strongly developed that the female fears nothing in defence of her progeny, and will at such a time assume the offensive towards humans as well as other enemies. The wild cat has rarely more than three or four young ones at a time, and often only two. It forms its nest in rocky crevices, and occasionally in the hollows of trees.

To enter exhaustively into the distribution of *Felis catus* in the Scottish Highlands would require more space than is available here. But those interested in the subject may find reference thereto in articles on "The Rarer Animals of Scotland," by that eminent naturalist Mr. J. A. Harvie-Brown, published in the "Zoologist," 1881-1882.

Prior to 1882 occurrences of the animal's presence were of course more frequent than in later years.

Mr. Tom Speedy, the Scottish naturalist, informs the writer that "There is no doubt *Felis catus* is still to be found on the west coast of Inverness-shire, and notably in Knoydart. It is also found," he continues, "in the north of Argyllshire, in the Loch Sunart district." And instances are on record of the destruction of three wild cats by Mr. Duncan Dewar at Remony, Perthshire, in 1896, 1898, and 1899 respectively.

Among recent captures is one which took place about two years ago, in the Invergarry district of Inverness-shire, when three young wild cats were trapped. This trio, which the writer has seen, were for some time in captivity in Kingussie, the Badenoch capital. One of them was a tom, and the other two females. The first to reach Kingussie was the male, and a month afterwards a female was caught. Upon being put together the two became quite amicable.

About six months later another female was captured, and put into the same cage. Two nights afterwards a fierce fight took place, when the prison, which had only a frontage of wire netting, was broken, and all three animals escaped.

They ran amuck amongst the poultry, and killed upwards of forty head of cocks, hens, ducks, and turkeys. After being at large three days, one cat, a female, lacking the craftiness of the hill fox, was again caught and secured.

Being now alone in captivity she made a most terrible din, and was answered nightly by the tom cat from the side of Craigbeg at the back of Kingussie. The latter was finally tracked in the snow, trapped once more, and returned to his jail. He died, however, during last winter.

There is, accordingly, at the time of writing but one female alive in confinement at Kingussie. "She is as wild as the first day I got her, and likely to continue so," remarks Mr. A. MacFarlane, her owner. "I think," he adds, "she would rather starve than eat any food excepting raw meat. We have tried her with porridge and milk, but she would not touch it."

When anyone approaches this cat's cage a vindictive light gleams in her green eyes, and she spits and hisses as a tame cat will do when held at bay by a dog. Her appearance, manners, and habits, in short, are sufficient to satisfy the most incredulous person that she is a true specimen.

Though offered other food, she will eat nothing but flesh in its different forms, and water, like that of all carnivorous animals, is her only drink. She is nearly double the size of a tame cat, and weighs about twenty pounds.

A later specimen of *Felis catus* was secured as recently as May last at Cullachy, near Fort Augustus. Anent its destruction, says John McArthur, keeper there, "I shot it at a fox cairn. I was trying the cairn with terriers for foxes. The terriers were not long in when I knew they had a cat. They were fighting with it for a long time before it showed itself among the big boulders. I only got a glimpse of it when I shot it." This cat, which was a female, measured thirty-six inches in length after it was stuffed.

The origin of *Felis catus* is alleged to be sufficiently obscure to render it doubtful in Scotland and elsewhere. Reference is said to be made to it in Sanskrit writings 2,000 years old. Whatever its origin, the future of this noble animal, as aforesaid, appears to be tolerably certain. If gamekeepers continue to be allowed to kill instead of take alive what few remaining scions of the family still remain, the wild cat in Scotland must soon share the doom of its English fellows, and become *non est*.

No one, of course, can deny the depredations of the animal, and his destruction of game, but what lover of zoology would have his nature altered? He is indubitably one of the scarcest, as well as one of the most picturesque, of our savage quadrupeds. Where, moreover, in Britain, could another be found with the same interesting personality?

Amateur Photography.

NOTES FOR JANUARY.

IF the methods suggested in our notes of last week are carefully followed an excellent negative should result, but if the general plan of splashing on strong developer at a low temperature be followed, the negative will be not at all a thing of beauty to gaze on. In all white work it is not safe to add bromide restrainer, except with the utmost caution. It causes blots of acute density, which are almost impossible to reduce, even with a powerful solution of ferricyanide.

The use of well warmed developer is most valuable in cold winter weather. Hydroquinone is an especially sluggish developer when the thermometer is low. Pyro, Rodinal, and Metol all alike feel it when the temperature is about the freezing point. One of the best ways of coaxing out an exposure is to place the developing dish in a larger porcelain one filled half full of water, about half-way to boiling.

A rough and ready test is to place the hand in the water in the porcelain dish, before introducing the developing tray, and if the hand can be borne in it without discomfort then it will be safe to put the tray in. If too hot, there is a chance of fogging the negative. As the water in the dish cools rapidly, it is necessary to have a metal can of hot water near to refresh the hot water dish when needed.

When skating subjects have to be done the rules for taking animals in motion have to be observed. For instance, it is not possible to take a rapid skater broad-side on, even with a focal plane shutter. So all pictures must be taken as the skater approaches the camera. The reflected light from the ice is a great help, and an exposure of 1/50th of a second when using extra rapid plates will give good and well-exposed pictures.

When working on ice, and using a camera, it is best to strap or clamp the legs, so that they cannot slide apart on the slippery surface. With three screws and the same number of short straps, this object can be attained with little or no expense.

On the other hand, when snow pictures are in question it is often a good plan to carry three good sized pickle corks as well, and fit these on to the points of the tripod legs, so as to prevent them sinking into a deep drift. This plan is recommended to those working on the moors, where the drifts run often into double figures, and would engulf the whole length of the tripod legs.

It is said by pictorial workers that the best effects are to be had when a slow thaw is in progress. The pools of water light up the picture in a wonderful manner; and as in a thaw the snow assumes a more or less grubby tinge, it is easier to deal with. If thaw work is contemplated, the photographer will find it money well spent to invest in a pair of long waterproof boots, as here is nothing so penetrating as snow water. Rubber boots are not safe when there is ice about, on account of the tendency of the rubber soles to slip on the glassy surface.

Snow work has one unpleasant feature, and that is the curious power the glare has of causing a sort of sickness. Tinted spectacles are a certain safeguard, but in this class of work, if going into solitary

places, it is best to have a companion, as the risk of being overcome by the cold is far from being an imaginary one. For the same reason it is best to carry a small flask of some stimulant. Those who have once suffered from the mysterious snow exhaustion will endorse the statement, that there is a certain amount of personal danger in photographing amongst the snow drifts.

F. J. E.

The Spotted Hyena.

THOSE who only see the hyena in a cage can hardly understand the horror and dislike with which most people who know it in a wild state regard the beast. And the spotted hyena of South Africa (*Hyæna crocuta*), though rather smaller than the largest of the striped hyenas (*H. Otriata*), is perhaps the most detested animal known to man, chiefly on account of its habit of digging up and de-



Photos.] **Spotted Hyenas.** [Copyright.
From the "Country-Side" Stereographs of the London Zoo.

vouring human bodies which have not been deeply buried. Coarse-haired and very evil-smelling, with shambling gait—owing to the comparative weakness of its hind limbs—slinking by in the dusk like an evil thing, or shattering the crystal silence of the moonlight with bursts of maniac laughter and weird howls, the "Tiger Wolf," as they call the hyena at the Cape, is loathed by all and feared by the weak—for sometimes it will carry off and devour small children, though its usual food is carrion. In a cage, however, the hyena looks rather a handsome beast, suggesting a mixture of wolf and leopard in its general appearance; and when caught young it can be trained to exhibit affection for its owner and be utilised as a watch dog.

Our Photo. Competition.

TWELVE GUINEAS IN PRIZES.

Photographs intended for the January competition should have their titles and names and addresses of the senders written clearly on the back, and should be addressed "Photo Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Profitable Poultry Culture.

By "CHANTICLEER"

Work for the Winter.

IT is during the winter months that the real test of profitable poultry culture can be experienced, for even with the best laying strains, unless given needful comfort and attention, the actual results will be anything but satisfactory.

Covered Runs.

I am a great advocate for covered runs wherever possible, and especially for suburban or town poultry keepers, for experience teaches me that in such surroundings, if the ground be kept covered with straw or loose litter, it is not only warm to the bird's feet and clean and dry throughout the winter, but by scattering small grain, such as wheat tailings, dari, and buckwheat (and even small seeds) in the runs overnight, and raking it in well, excellent work is thus provided for the inmates for at least the morning of the following day.

As in human beings, so it is with poultry, exercise means health, and in scratching for the buried corn healthy employment is given, with the admirable result of a decided increase in egg production, which, during the winter months, is an important consideration, when eggs are so scarce.

Hot Foods.

During winter progressive poultry-keepers do not give the hot soft food until the afternoon, preferring for their birds to have a morning's scratching exercise and their last meal in the afternoon, when it warms their bodies whilst roosting during the night.

There are many advantages to this procedure, for it gives us more time to look after in the early morning the urgent needs of any young chickens that may be hatched, and whilst attending to their needs the old birds are busy working for their food.

I do not advocate over-feeding of fowls in the winter, but the food should be well balanced, and fortunately there are many excellent ready mixed poultry foods placed on the market, which, if used economically, are within the reach of all, especially after being mixed with boiling water and all the meat and scraps from the table, for nothing need be wasted in a household when fowls are kept.

After allowing the biscuit meal or cereals used to stand for about twenty minutes it should be dried off to a crumbling consistency with sharps and bran, which increases its bulk and benefits the fowls' system.

Clover Products.

I have been consulted by numerous readers on the clover feed for poultry, which I recommended in my notes recently, and would further explain that it is short cut dried clover that is used, and which must be steeped in boiling water overnight, and mixed in meals, etc., the next day. For egg production and fertility it has no equal.

Should any difficulty be experienced in obtaining it, excellent clover products can be obtained from Messrs. Cypher's Incubator Company, 119 to 125, Finsbury Pavement, London, E.C., at 6s. per 50 lb. bag, or 10s. 6d. per 100 lb., carriage paid.

The Week's Wild Life in Pictures.

(See page 139.)

THE rough-legged buzzard (1) has been seen in a number of places in Britain this winter, being too often welcomed with a shotgun and, like the specimen in our illustration, "preserved" in a glass case. Although always called a "buzzard," it is really a buzzard-eagle, having feathered legs (hence its name of rough-legged); and in flight, when it floats easily on outspread wings after a few measured flaps, it exactly resembles a small eagle. Its pale tail with white-edged black band at the end is conspicuous in flight.

2. This little snow scene, showing a number of sparrows and a starling feeding in the snow, has been a familiar sight in many gardens this year; for hard weather always softens our hearts towards the birds and, mischievous as the sparrow may be in spring, few of us refuse him crumbs in winter.

3. We have kept the name "stonecutter" for this snail because its Latin name, *Helix lapicida*, means a "snail stonecutter." This interesting creature is by no means common, being found in only a few counties of England, with only one record for Scotland, and none, I believe, for Ireland. It lives in damp lichen covered limestone rocks; and Linné was under the impression that it had the power to bore into such rocks and so gave it its name; but there is no modern evidence to show that such is the case. The shells which are reproduced were taken at Buxton.

4. It is truly a magic transformation which a white frost often effects in the garden, so

larger at the top than the bottom, they fit closely together and they are covered with a protective coat of gummy varnish.

The vapourer moth's eggs are shown in No. 6. The male is a reddish brown moth with a conspicuous white eye on each upper wing; but the female is a fat, grey, wingless creature who never leaves the cocoon from which she has emerged, even laying her eggs all over it, as shown in the picture. You may find these egg-covered cocoons, which look like bits of cobweb, in crevices of tree trunks, walls, etc. Their protection appears to lie in the fact that the cocoon is interwoven with the stinging hairs formerly worn by the caterpillar and birds could not eat the eggs without the hairs.

7. The fieldfare is the handsomest of the thrush-birds which come over to spend the winter here, easily recognised by his chattering note of "ohak-chak" and by the pale grey which is shown above his blackish tail in flight. A very little hard weather, especially if snow covers the ground, kills off the fieldfares in large numbers, and it was the weakness of hunger which caused the bird in our illustration to sit so tamely for its portrait. Of the fieldfares which survive the winter, some often stay with us until mid-May.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

THE accessions of animals to the Society's collection have been well maintained up to the end of the year, and several out-of-the-way beasts claim notice. Chief among these is the Skunk, of which three specimens are now in the collection, of the common

irritating way, raiding camp-stores and refusing to get out of the way of vehicles.

If killed stone-dead at once, as by a well-directed shot, it is, of course, harmless, but it must have no time to discharge its "artillery." In appearance it is like a large, thick-set, black-and-white ferret, with a very bushy tail.

Skunks have been exhibited before, though not for many years, but the Siberian Wild Dogs (*Cyon alpinus*), also new arrivals, are new to the collection. Their resemblance to the Indian Red Dog is obvious at once, but, in accordance with their colder habitat, they have a much thicker coat, which is also much paler in colour—rather yellow than red.

It is interesting to compare these Asiatic Wild Dogs with the recently-acquired African Hunting Dog (*Lycan pictus*) in the same range of dens, and note how very different are the two types, although their general habits and character seem to be much the same, both being fierce hunters of big game, rather than slinking cowardly beasts with a taste for carrion, like most of the dog family.

Some specimens of the Indian Striped Squirrel (*Sciurus palmarum*) are now again to be seen, after some years. The exhibition of a creature so very common in our great eastern dependency always has considerable interest. Although often called Palm Squirrels, by the way, they do not frequent palms more than other trees, if so much, and are particularly at home in the verandahs of houses.

The Grey Squirrels presented some time ago by the President of the Society, the Duke of Bedford, from his Grace's wild stock at Woburn Abbey, have been encouraged to come out of their enclosure by means of a bridge formed by a rope stretched from a tree within to one without. This idea has met with their approval, and they may now be watched scampering about the grounds and making their nests in the trees.

Among the birds received of late may be noted two new to the collection, the Green Toucan (*Aulacorhamphus sulcatus*) of South America and the Grey Toucan (*Schizorhis concolor*) of South Africa. The former bird, the gift of Captain A. Pam, is chiefly noteworthy for its green colour, most toucans being black or dark, relieved with brighter hues; the latter is not only curious by reason of its sombre grey dress—so many of its relatives wearing brilliant plumage—but is well known and disliked by sportsmen in South Africa owing to its habit of alarming game; it is well known there as the "Quay-bird." The Zoo specimen was only on deposit, and has now been removed; but the fact of the exhibition of the species is worth noting, as it is so familiar in its own country.

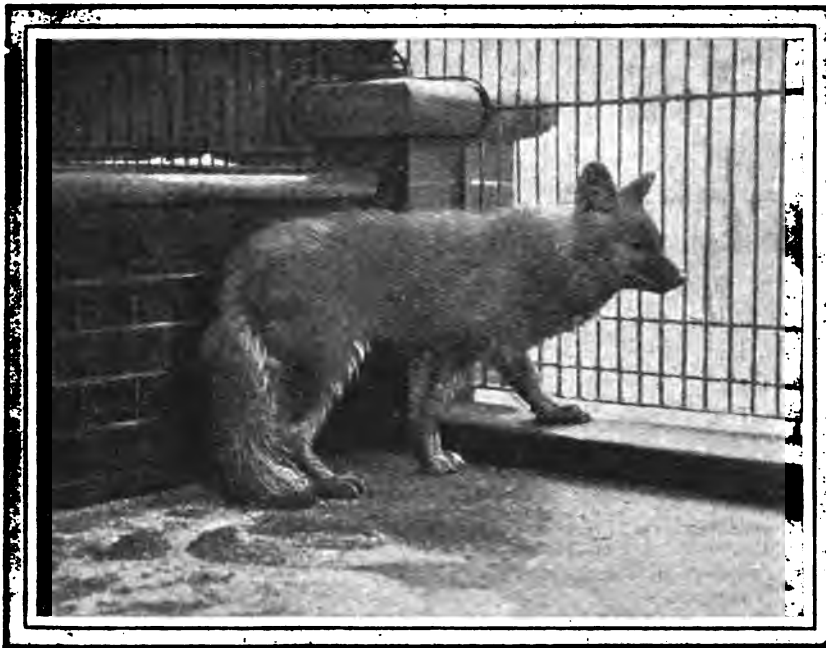


Photo.]

The Siberian Wild Dog.

[W. S. Ferridge, F.Z.S.]

An interesting new arrival at the London Zoo.

completely changing the appearance of the plants that often one has to shake some fantastic tuft of snowy filagree to discover what sort of plant may be inside. The illustration shows how a commonplace privet bush may be translated into fairy confectionery. Other forms of frost are noticed on page 131.

5 and 6. These illustrate two of the excellent methods by which different kinds of moths protect their helpless eggs during the dangerous months of winter. Above (No. 5) is the neat bracelet of eggs which the lackey moth—a fat, fluffy yellowish moth with two pale lines—gums together round twigs of fruit-trees. By their shape, being slightly

North-American species *Mephitis americana*.

I had made the acquaintance of these individuals months before at a dealer's; they are a female and two young, which were quite small when they arrived in England. They had, of course, been operated on to destroy their power of secreting their characteristic and insufferable perfume, but they go through the motions of raising their tails and stamping which precede the discharge.

Without this preparation a Skunk would be an impossible animal to keep in captivity, as, once irritated, it makes the neighbourhood uninhabitable; and in the wild state it seems to presume on its immunity from attack in a most

British Wild Life Stereographs

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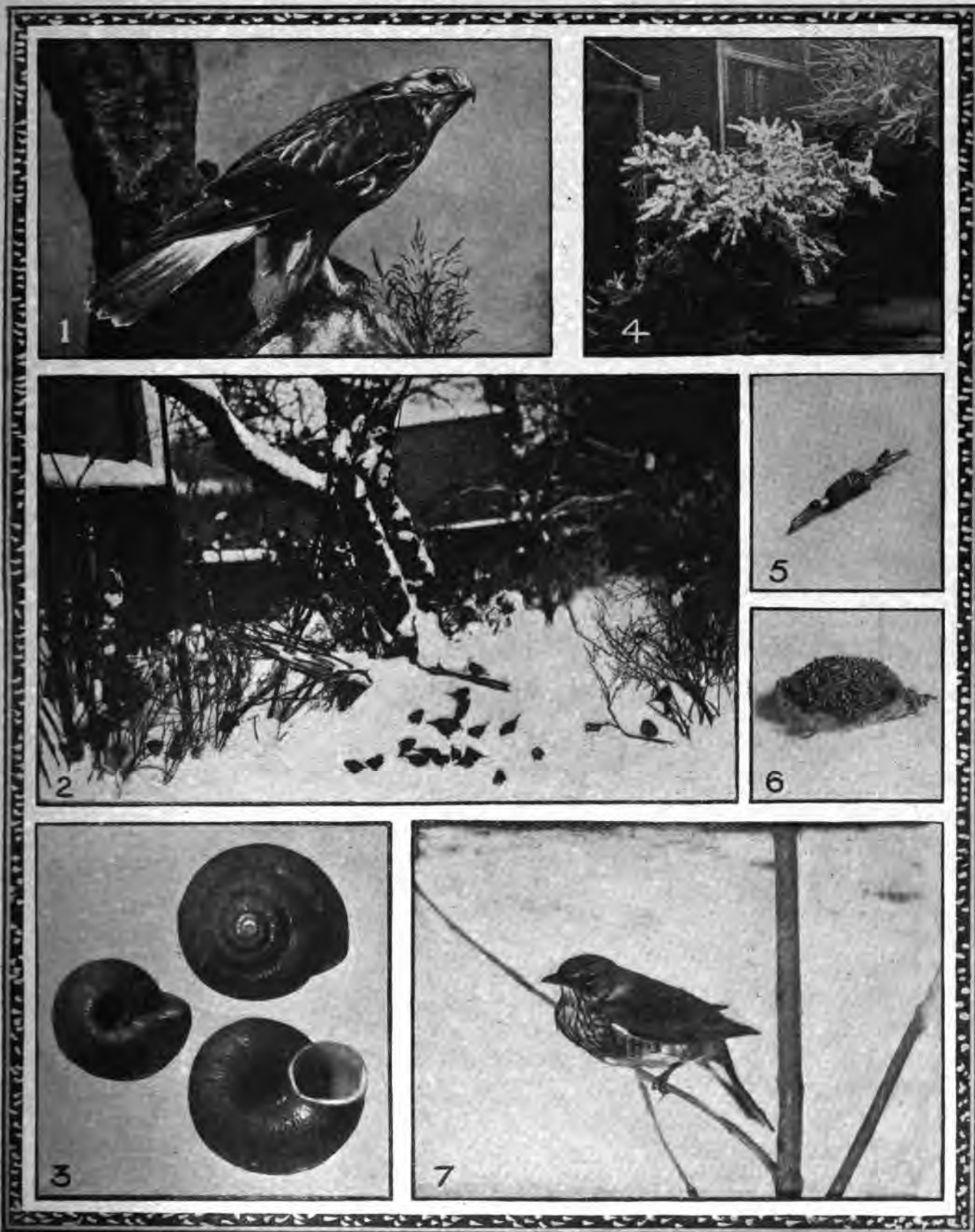
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THE WEEK'S WILD LIFE IN PICTURES.

(See page 138.)



1. Rough-Legged Buzzard, *Archibuteo lagopus* (G. Parkin). 2. Feathered Pensioners (J. T. Newman). 3. Stonecutter Snail, *Helix lapicida* (J. C. Varty-Smith). 4. Hoar-Frost on Privet Bush (G. Parkin). 5. Bracelet of Eggs of Lackey Moth, *Bombyx neustria*, and 6. Eggs of Vapourer Moth, *Orgyia antiqua* (C. W. Colthrup). 7. Fieldfare, *Turdus pilaris* (T. A. Metcalfe).

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page 111), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

The Skylark's Crest.—Both sexes of skylarks raise their crests when excited.—(to S. STANLEY.)

Hiding Moorhen.—It is common for moorhens to remain in their hiding-places until they are actually touched. The photograph would not reproduce well, thanks.—(to J. H. VICKERS.)

Stolen Crocuses.—No, I do not think that either human beings or birds stole the crocus bulbs from the grave. Field mice are very fond of crocus-bulbs and will dig them up one after another. The "bulbs" of the crocus are, by the way, not really bulbs, but corms.—(to H. COOKE, Bradford.)

Sugaring for Moths.—The times to sugar for moths are any still, dark, warm nights from spring to autumn, when neither sallow, bramble nor ivy are in bloom near at hand. The attraction of these flowers is greater than that of sugar. It is of little use, sugaring on a moonlight or windy night.—(to A. N. TURNER.)

Persian Cat's Short-haired Kitten.—One of your cat's kittens was short-haired because either its father or some ancestor was a short-haired cat; but it in turn has had a long-haired kitten because its mother was a Persian. This "throwing-back" to the type of ancestors is common in all creatures, not only in cats. Only by watching them and punishing them will you cure your cats of thieving in the larder.—(to L. ATTWATER.)

A Friendly Wren.—The wren which sat close to the glass and watched you at your desk for five minutes was probably less interested in you than in its own reflection in the glass, mistaking it for another wren. Tits are especially fond of looking and pecking at themselves in the window panes.—(to A. HEMSLEY.)

Overgrown Beak in Parrot.—If the overgrowth is considerable so as to incommode the bird in feeding or otherwise the tip should be cut back to nearly its proper length. A pair of wire cutters or good, strong, and sharp nail scissors is the best thing to do it with, and smooth the cut edges a little with a file afterwards. To perform the operation you must first catch the bird (after it has settled down to roost would be the best) and roll it up bodily in a large strong towel, or a sheet or blanket, so that it cannot struggle or bite. Then find just its beak between the folds and cut it. Be careful not to cut too close or it will bleed. If you are quite inexperienced perhaps it would be better to ask a veterinary to do it.—(to G. A. POWELL, Bournemouth.)

Bald Bullfinch.—Queries of this kind should always state how the bird is fed. I expect improper diet is at the root of the trouble. Feed on a mixture of two parts canary, one part summer rape, one part short oats, and just a sprinkling of hemp and sunflower. Give green food daily—rape seedlings, twigs, and buds of trees, chickweed, or groundsel, and, when you can get it, a spray infested with rose blight or aphides or a small meal-worm occasionally. If fed in this way it should quickly recover its plumage. You might give the following for a short time two or three times a week to help it. Dissolve in its drinking water as much Epsom salts and chlorate of potash as will lie on a three-

penny piece and add six drops of lemon juice.—(to G. COOK, Westbury.)

To Get rid of Rats.—Rats and mice are well known to be fond of phosphorus, hence innumerable fires have been caused through their gnawing the old-fashioned lucifer matches. Advantage may be taken of this taste by procuring some phosphorus paste at the grocer's or oilman's and spreading it thinly over small pieces of stale bread which must be put in the immediate vicinity of their haunts, but out of the way of children and other domestic pets, as it is a poison. The phosphorus is said to cause the corpses of the vermin to dry up in an entirely inoffensive manner, and I can testify after many years' use of it that no evil results have ever followed—except to the mice.—(to C. NICHOLSON, Chingford.)

Moulting Troubles.—Sometimes a fowl becomes almost naked and an unpleasant object to gaze upon. Outward treatment is then necessary in the form of sulphur ointment well rubbed every night and the bird confined to the house. And I would advise the cleansing of the houses and runs during the moulting season, when loose feathers will quickly accumulate in all parts. Remove as many as possible daily, but thoroughly clean and disinfect with slaked lime all parts, and disinfect the houses and run at least once a week. By this means you will prevent the breeding of insects and poultry parasites, thus removing one risk of disease.

Erratum.—Hedgehog.—Although the hedgehog is readily carnivorous, our expert on the treatment of pets, of course, made a slip, in his advice regarding an ailing hedgehog in No. 85, in describing it as belonging to the order carnivora. It belongs to the insectivora, with the moles and shrews. [I am glad, however, to know that this technical slip did not affect the excellence of our expert's advice, as the following extract from a letter written by the ailing hedgehog's owner shows:—"I now write to thank you for your kindness in sending me instructions so quickly and to let you know that the treatment you recommended has been entirely successful. The hedgehog gradually gained strength in its limbs, and can now run about quite sturdily and eats well the various things you prescribed. I am exceedingly grateful to you for the trouble you took over the matter and feel that you ought to know this. It is a great relief to my mind to have the little creature restored to health, and it is a comfort to know of someone who does not seem to think it a waste of time to give advice about a wild animal.]

Mice in Bed-room.—There is nothing better than a well trained cat to keep a room free from mice, but it takes some care and patience to train them from kittenhood. But they can be trained to be quite reliable. The use of poisons has many great objections. Inoculation with the Danysz Virus also has excellent results. See advt. columns in previous issues. As a preventive measure store all seeds and foods in tins well out of the reach of mice, and keep the floor and all other places scrupulously free from waste seeds or husks.—(to J. H. KEITH, West Hampstead.)

Ailing Siskin.—Your siskin is suffering from so-called asthma. You should have said how it was fed. Feed on a mixture of two parts canary, one part summer rape, and a sprinkling of hemp, teazel and sunflower. Give green food daily when quite free from frost, keep it free from draught and do not hang it up near the ceiling. Do not keep it too warm as these birds cannot stand coddling. A cure can scarcely be expected, but to relieve it get a chemist to mix you 1 dram each of Ipecac., chloric ether and chlorodyne in five drams of Syrup of Squills, and give the birds ten drops of the mixture in its drinking water daily until breathing is better.—(to S. CARROLL BENNIE, North Berwick.)

Unanswered Questions.—Correspondents whose queries remain unanswered will find the reason in the "special announcement" above.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, ed., post free. Postal orders preferred to stamps.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published.

B.E.N.A. Motto.—The following lines have been suggested, among others, as mottoes for the B.E.N.A.:—

"Whose schoolmaster is nature."
"All's love, yet all's law."
"Looking through nature up to nature's God."

"Nature never did betray
The heart that loved her."
"We clasp hands across the distance."
"God's in His heaven—all's right with the world."

"Nature is God's work."
"For the future in the distance
For the good that we can do."

Branches and Affiliated Societies.—*Glasgow Branch:* "A Visit to the Outer Hebrides" will be the subject of a limelight lecture, by Mr. P. Fenton, L.P.H., M.P.S., at eight p.m., Friday, January 25th, at the Christian Institute, Bethwell Street. All B.E.N.A. members or intending members should attend. Mr. John Scott, 287, Eglinton Street, Glasgow, is the hon. secretary.

ERDINGTON AND DISTRICT NATURAL HISTORY SOCIETY will hold their first annual exhibition and social evening on February 8th, in the Public Hall, Erdington. There will be a concert, THE COUNTRY-SIDE Wild Life series of lantern slides, an exhibition of specimens, and a dramatic entertainment. Doors open at 7 p.m., admission only 6d. All B.E.N.A. members who can should make a point of attending. Mr. W. F. Wiemann, 22, Orchard Road, Erdington, is one of the hon. secretaries.

SWANSEA FIELD NATURALISTS' SOCIETY.—The above Society had been affiliated to the B.E.N.A. The hon. secretary is Mr. N. Vaughan-Jones, 4, Oaklands Terrace, Swansea.

SKELMANTHORPE BRANCH.—The following towns and villages are included in the Skelmantorpe district:—Shelley, Shepley, Lepton, Kirkburton, Grangemoor, Flockton, Emley, Bretton, Highhoyland, Clayton West, Cawthorne, Silkstone, Hoylandswaine, Penistone, Inbirtsworth, Gunthwaite, Denby, Denby Dale, Kexbro', Cumberworth, and Newmill. Mr. Fred Lawton, Carlton Terrace, Skelmantorpe, is the hon. secretary, and will be glad to hear from readers at any of these places.

Exchange of Specimens.—*Wild Plants:* Mr. A. Bamford, 62, Newton Street, Gorton, Manchester, is willing to exchange fresh specimens and lists of same.

Junior Club Wanted.—*The Potteries:* Is there any member at Stoke-on-Trent or neighbourhood willing to undertake the formation of a Junior Club for the centre of the Potteries?

To Gardeners.—All interested in gardening should send to Messrs. Fidler and Sons, Royal Berkshire Seed Stores, Reading, for a copy of their new catalogue for 1907. This contains a complete list of their vegetable seeds, with excellent illustrations of prize-winners and other specimens. The catalogue may be obtained free upon application, and all garden seeds are sent carriage paid.

The Garden.

A Valuable Orchid.

PLANT WORTH 1,150 GUINEAS.

AT a sale of some orchids from the famous collection of Mr. H. T. Pitt, Stamford Hill, which took place in the auction rooms of Messrs. Protheroe and



Photo.]

[Copyright:

Odontoglossum crispum Pittianum.

This plant at an auction sale last year realised the record sum of 1,150 guineas.

Morris, Cheapside, on March 22nd last, a plant of *Odontoglossum crispum*, var. Pittianum, realised the record price of 1,150 guineas.

Our illustration shows four of the flowers of this plant, which some experts consider to be the handsomest of all the spotted forms of *O. crispum*.

The flowers are about four inches across, full, and of good shape, and they are white with large irregular blotches of vinous red, the colour showing through on the reverse side. Larger prices than this have been offered for orchids; for instance, Mr. Pitt has one for which he has refused 2,000 guineas; there are also others, all of them forms of *O. crispum*, which have fetched prices verging on to £1,000.

The type, itself a lovely orchid, though now to be bought for half-a-crown, was first found by the plant collector K. T. Hartweg, in 1841, in the province of Bogota. Since then it has been introduced in large quantities, and so valuable have certain districts in Colombia become owing to the superior quality of their *Odontoglossums* that they are farmed solely for the supply of these plants to the European and American markets.

Being found at high elevations, *O. crispum* may be grown in a cool house from which frost is excluded. There are many fine collections of the varieties in England, particularly in the neighbourhood of Manchester, and the competition for the possession of the choicest of them has resulted in their becoming by far the

most valuable plants known. Whether they are worth such high prices is exceedingly doubtful, except on commercial grounds.

The ordinary forms of *O. crispum* are good enough to rank among the best of decorative orchids.

Garden Queries Answered.

Edelweiss Culture.—The edelweiss (*Leontopodium alpinum*) is a good-natured garden plant, notwithstanding the excitement it gives rise to when seen in flower in a border or rock garden. It is a perennial, but, like many other perennials, it is all the better for annual transplanting and dividing, or it may be treated as an annual by sowing the seeds, to be obtained from any reliable seedsman, in a box in February and transplanting the young plants to the bed or a position on the rockery in May. We have plants that have been outside for ten years. Of course all the leaves die in winter, but the crowns are uninjured by cold. We also had a good show of bloom last summer on plants raised from seeds sown the previous February.—(to R. L. MIDDLEMAS, Edinburgh.)

Wild Plants for the Wall Garden.—In the interesting article on "Planting a Wall Garden" in THE COUNTRY-SIDE, December 1st, I see no mention of wild flowers which I have seen growing on old walls and which many might like to look for in their country rambles:—Yellow Toad Flax (*Linaria vulgaris*), Ivy-leaved Toad Flax (*Linaria cymbalaria*), Viper's Bugloss (*Echium vulgare*), Red Valerian (*Centranthus ruber*).—(M. M.)

In the Wild Garden.

THERE are times, especially in early spring, when the wilderness is by far the most beautiful part of the garden. Elsewhere there is too much bare brown mould still showing where the wonders of the spring flower beds are not yet revealed; but in the wild garden the earth may be already carpeted with the fresh greenery and clustered flowers of winter aconite and snowdrop.

The illustration shows one small patch of the ground in a long shade where the ground is yellow with winter aconites golden cups, and frilled green saucers make bright background for the tufts of common snowdrops. Presently these will be succeeded by primroses and bluebells; and later still wild ferns will uncurl their new fronds amid wild summer flowers.

Even in mid-winter the ground is pleasantly green enough with low-creeping ivy; and amid this the snowdrops seem to flourish all the better, sending up their blooms on far longer stalks than those which they produce in the open.

No one whose ground includes a plantation or a spinney can anywhere find more pleasure in personal gardening than by converting all its glades and nooks into spring gardens of wild and hardy flowers.

Work for the Week.

Carnations in Pots.

CARNATIONS in pots require care in watering; indeed, if they are standing in a frame or house on a cinder-ash bottom, where they can enjoy plenty of air and light without being actually frozen, they will not require any water for weeks together. The danger lies in watering them whenever the surface soil appears to be dry. Whilst experts are very successful in the cultivation of carnations in pots, others who attempt them generally fail because they coddle the plants and over-water them in winter.

Where there are plenty of plants a few may be placed in a temperature of 45 to 50 degrees, not more, except when the sun raises it, and gently forced so as to get them into flower in March. A higher temperature either causes the flowering shoots to go "blind" or the flowers when they open are small, thin, and poor in colour.

Auriculas.

Auriculas which have slept through the winter will shortly wake up, and their cone-like growths begin to unfold. These also like to be kept on the dry side until they get well into new growth. They should now be examined for green fly, brushing off with a soft paint brush any that are seen; the surface soil should also be loosened with a pointed stick.

In mid-February a top-dressing with loam, in which sand and crushed oyster shell has been mixed, should be given, first loosening the top half-inch or so of soil and shaking it off. Keep the plants well aired.

They are hardy enough, but to get good flowers in spring it is necessary to protect them from frost. They do not force well, so that if any extra heat is given it should



Photo.]

Snowdrops and Winter Aconites.

[G. B. Norreys.

be only that from the sun, which can be turned to account by careful manipulation of the lights of the frame in which the plants stand.

(Continued on page 142.)

FIDLERS' SEEDS GROW.

TO PERFECTION BECAUSE

THEY ARE THE BEST.

You can't be too particular over the quality of your seeds. Poor seeds don't pay for planting. FIDLER AND SONS offer you an unsurpassed selection of tested seeds, unexcelled for purity, vitality, productiveness, and cheapness. Prove this for yourself by examining their New Illustrated Garden Seed Guide and Catalogue, which will be sent post free on receipt of your address. Kindly mention this paper.

All Garden Seeds Sent Carriage Free.

FIDLER & SONS,
Royal Berkshire Seed Stores,
READING.

MOST EASTERLY NURSERY



SECRET OF SUCCESSFUL PLANTING—buy from hardy neighbourhood. I have an enormous stock of Hedging Plants of all sorts, grown on my Nurseries on England's Bleak-est Coast, which are open to every wind which blows, with a consequence that my large and varied stock is as hardy as it can be, and will thrive anywhere. A Descriptive Pamphlet containing cultural directions for hedging and description of Myrobellia free. Myrobellia Plum (for fencing), the wonder of the age, and still unrivalled for quickness of growth. It makes a close, thorny—i.e. impenetrable—fence, and is non-injurious to stock. 1½-2 ft. 5s. 100, 30s. 1,000; 2-3 ft. 7s. 6d. 100, 50s. 1,000. 3-4 ft. 10s. 100, 70s. 1,000. Privet, Common, 1½ to 2 ft., 5s. 100, 35s. 1,000. Privet, Oval, 1-1½ ft. 6s. 100, 45s. 1,000; 1½-2 ft., 10s. 100, 70s. 1,000; 2-3 ft., 15s. 100, 100s. 1,000. Quilthorn, 1 ft., 3s. 6d. 100, 25s. 1,000; 1½ ft., 5s. 100, 35s. 1,000. Laurels, Beech, Holly, Yew, etc., in all sizes. Prices on application.

STARTLING OFFER.—I will pay carriage on all 5s. and larger orders to your nearest station. Distance or weight is no object. Send for Catalogue of FOREST, FRUIT TREES, SHRUBS, ROSES, PLANTS, BULBS, SEEDS, etc. All sorts and any quality supplied. State wants, low estimates per return, with large catalogue full of cheap offers, also (if requested), large packet free of choice mixed Sweet Peas.

E. GAYE GULTON BROAD **LOWESTOFT**
NURSERIES

NESTING BOXES.

Having had so many applications for Nesting Boxes, and requests from readers that we should manufacture these, we are going into the whole matter and hope to make an announcement next week.

THE GARDEN.

(Continued from page 141.)

Now is a suitable time to sow seeds of auriculas, as they do not germinate quickly, especially if they have been allowed to get dry and hard. Seeds have been known to lie in the soil for twelve months before germinating.

Hollies.

There is a great crop of berries on holly trees this year, and it is worth while to collect a peck or so of them to sow for a stock of young plants, for although the seedlings grow slowly at first yet they do ultimately become valuable for hedge making, cover, and such-like purposes.

There is no better fence than a good holly hedge, and there is no easier way of getting one than to raise the plants from seeds.

Foresters, who know the value of the holly, make an annual sowing of its seeds. The berries, when gathered, should be mixed with sand and placed in a box in a shed for six months before sowing them in a bed on the shaded side of a wall or hedge. Good varieties cannot be raised from seeds; they are either grafted on seedlings of the common holly or propagated from cuttings.

Seaside Gardens.

The planting season affords an opportunity to improve gardens near the sea by adding good things that are known to thrive there. Shelter is the great desideratum in most places, and poplars or pines are usually planted for this purpose.

But there are other trees that thrive equally well; for instance, the alder, which does exceptionally well in wet or swampy soils; the Norway maple, one of the best of all trees for situations exposed to strong winds; the evergreen oak, a slow grower, but when once it does get up it holds its own, and for winter resorts it is a most excellent tree, as it keeps its leaves all the year round. The common oak is useful where a plantation is needed; three-year-old seedlings should be planted by placing them about four feet apart; they can be thinned as they get crowded.

The sea buckthorn or the common tea plant (*Lycium*) may be planted to form an undergrowth, and also to serve as nurses to the young trees. The elder is a good low-growing tree or shrub for "break" planting, as it thrives in poor sandy soil and soon grows into sheltering size. Of course, the Monterey Cypress (*Cupressus macrocarpa*) is the great stand-by of seaside gardeners.

The Cardoon.

A Good Vegetable.

We have growing in the garden a vegetable called a "cardoon." It is now about two feet from the ground. The plant seems to be unknown about here and we cannot find out which are the eatable parts. Could you help us?—P. C. FOWKES, Bedford. [The Cardoon is a kind of Artichoke, probably the two are only forms of one species, *Cynara cardunculus*, a native of South Europe. The cardoon grows from four to six feet high, has pinnatifid leaves, sometimes margined with spines. The fleshy leaf-stalks are the edible part, as in celery. They require to be tied up and blanched, in fact the same treatment as is given to celery suits the cardoon. Some

growers blanch the leaves by placing drain pipes over them and filling up with sand. They are fit for use in about three weeks after the pipe has been placed over them. They are spoiled by frost. In France they are dug up in November and replanted in a cellar where the process of bleaching is completed. The blanched leaf stalks are washed, cut into pieces four inches long and then boiled until the outer skin can be removed with a cloth. They are then again washed, boiled in good stock or broth and served hot with brown sauce made from good gravy. The Puvic cardoon is the best.—ED.]

"Astronomy for Beginners."—In this article on page 102 the advice to look for the "Pleiades" towards the Eastern horizon at ten o'clock was only correct at the time when the article was written. Owing to the earth's motion the "Pleiades" were high up in the south at 10 p.m. when it was published.

Improving the Country.—To persons desirous of beautifying the lanes near towns Mr. G. Chester, 88, Nelson Street, Kettering, Northants., will send on receipt of a stamped addressed envelope some of the following seeds:—Yellow Melilot, Corn Cockle, Hemp Agrimony, Catmint, Narrow-leaved Everlasting Pea, and a small quantity of Yellow Horned Poppy.

"The Hastings and East Sussex Naturalist."—The first number of this journal of the Hastings and St. Leonards Natural History Society promises well. The "Annual Notes" by the Rev. E. N. Bloomfield show that a great deal of good and active work is being done by the society; and the President's (Mr. Thomas Parkin) paper on extinct birds has valuable illustrations of the dodo. "The Hemiptera of the Hastings District," by Mr. E. A. Butler, is the first instalment of what promises to be a very useful contribution to popular knowledge of the little-studied order of British "bugs," while Mr. Norman F. Ticehurst effectively establishes the claim of the rare blue-headed wagtails to be breeding birds in Sussex.

The Best of its Kind.—"I have taken your paper from the first and can only say that it is by far the best paper for natural history subjects that I have ever seen.—Yours truly, G. MACKRELL, 8, Sandford Road, Bromley."

OUR MOUNTED BUTTERFLIES.

15, Christchurch Road,
Winchester,
January 7th, 1907.

Dear Sir,—

I am obliged for the four specimens of your wonderful art. The "White Admiral" is most exquisite in "bloom," and all in their setting-up, especially in the delicate fringes of the wings.

I enclose P.O. for 11s. 6d., and I must have a look at your collection for other specimens I want.

Faithfully yours,

W. M. HARMAN, M.D.

(See front covr.)

Infant Feeding.—The Health Committee of the Eccles Town Council recently petitioned the Local Government Board to prohibit by law the sale of infants' feeding bottles fitted with tubes which are undoubtedly a grave menace to infant life. In view of this it is interesting to note that Messrs. Mellins manufacture a feeding bottle constructed on hygienic principles which further has the advantage of preventing the child "sucking in wind" with its food. In a leaflet issued by the manufacturers they claim that Mellin's food is the most perfect modifier and humanizer of cow's milk and is greatly superior even to the milk prepared and sold by municipal authorities, besides being cheaper.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 89. VOL. 4.

JANUARY 26, 1907.

1d. WEEKLY.

A Pleasant Hobby.

The Amateur's Art of Stick Making. By F. H. WORSLEY-BENISON.

AMATEUR stick making is a pleasant hobby for the leafless months—that is the finding; the making comes in at any time. Now is a good time for finding, because the sticks are still readily seen, and at this season of the year, there being very little sap in the wood, the sticks are less liable to crack during the time of drying.

In sawing out the stick from the hedge or wood, leave two or three extra inches on the handle to allow for splitting while drying. Put the sticks away in a dry—not hot—place for four or six months, then send them to any place where they straighten wood by steaming. This is the only part in making the finished article that is more conveniently done by outside means. The cost is only a trifle, and the advantage great, because not one stick in a hundred is naturally perfectly straight.

Most handles will require more or less of the rasp and file upon them, especially the knob shaped. The top stick on the right in the illustration (12) is a crab, a perfect stick in every way. The head of it was sawn out of a solid stump.

To complete the stick after straightening take the bark off, and then scrape down with the edge of broken glass—this is sharper than, and saves the edge of, your knife. After this smooth down with coarse and fine glass cloth or sand paper. Wipe clear of all dust and varnish with best carriage varnish, previously driving a tack into the bottom end by which to hang up in any place perfectly free from dust for a fortnight or three weeks. Put the varnish on with an artist's hog-hair brush *very* thinly. When quite hard sprinkle a little powdered pumice stone

on a wet cloth and lightly rub over the whole stick just enough to dull the surface. Wipe dry and varnish as before. A ferrule fitted on the end completes your stick.

one with two sticks and only one handle. The tools on the left are for outdoor work; those on the right for home work. The names of the full length sticks, reading from the left are: Sycamore, willow,

wild cherry, crab, ash, elm, oak, holly, yew, blackthorn, crab, holly, blackthorn, broom, yew, oak, whitethorn, blackthorn, and maple.

In a hobby of this kind one has the unusual advantage of making things which are not only pleasant to look at but are also a pleasure to use; and perhaps there is no other collection which so vividly recalls enjoyable days spent amid delightful surroundings.

And stick-making has one very large advantage over most rural hobbies, in that it provides occupation and interest, especially during the winter months. In the summer the country-dweller or visitor has almost a plethora of interests, while the weather also tempts to idleness. In the winter, on the other hand, the country seems to have very little to offer that is attractive or interesting, as an incentive to rambling on unfrequented ways.

This incentive is, however, completely provided by the ever-present desire to add yet another model walking-stick to your collection. There will always be some trees of whose wood you desire more perfect specimens; and you never know what quaint and interesting growth in hedgerow or woodland

may not catch your experienced eye; for, apart from sticks shaped on model lines there is no limit to the number of eccentric freaks of woody structure which lend themselves to the stick-maker's art, especially where woodbine is in profusion among woodland undergrowth.

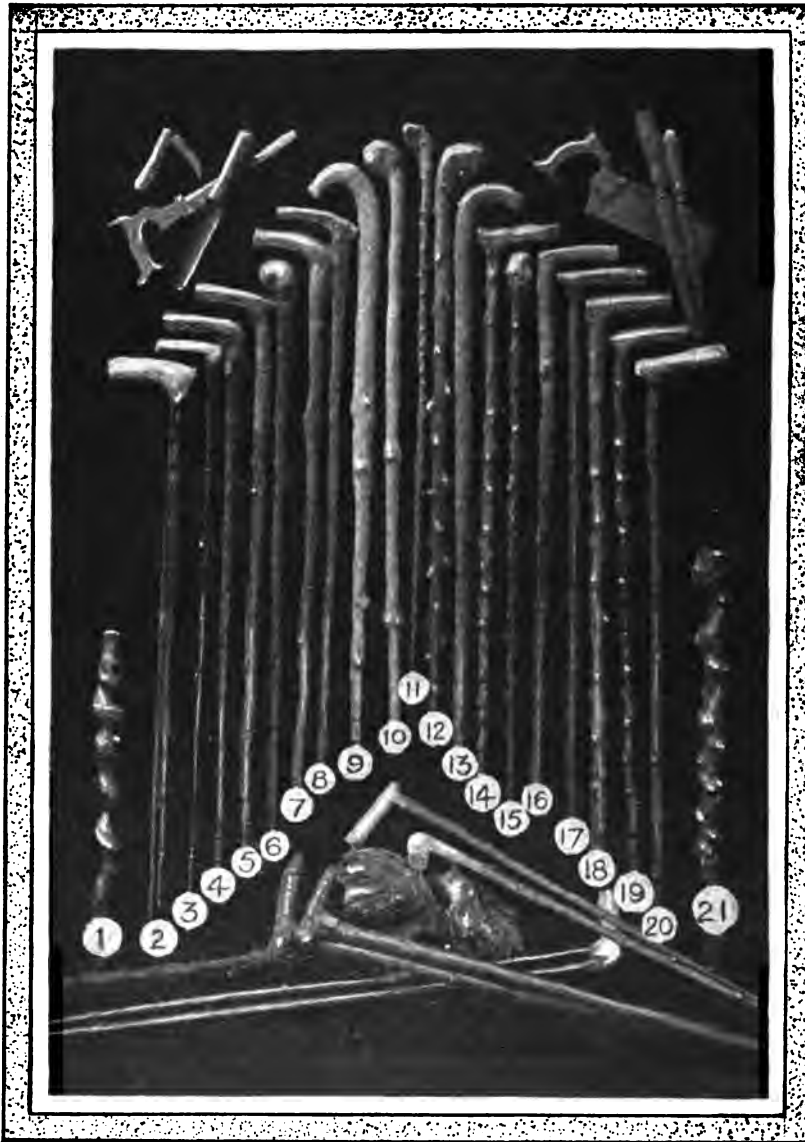


Photo.]

Sticks made by an Amateur.

[F. H. Worsley-Benison.]

1. Hazel twisted by honeysuckle.
2. Stick of Sycamore.
3. Willow.
4. Cherry.
5. Crab.
6. Ash.
7. Elm.
8. Oak.
9. Holly.
10. Yew.
11. Blackthorn.
12. Crab.
13. Holly.
14. Blackthorn.
15. Broom.
16. Yew.
17. Oak.
18. Hawthorn.
19. Blackthorn.
20. Maple.
21. Shillelagh of Irish Oak.

Below a group of unfinished sticks, in one case two sticks to one handle. On the left above, tools for outdoor use; on the right above, tools for indoor use.

The piece of hazel on the left (1) in the photograph shows the effect of a creeper (honeysuckle) having grown around it.

The piece on the right (21) is a good specimen of a gnarled Irish oak shillelagh.

The collection in the foreground are sticks in a more or less unfinished state—

Country-Side Notes.

Warham, Norfolk.

"Amid that vastness, in his struggle with the wilderness, body and mind grew. Every littleness fell away from him. . . . From the forest he drew strength for his soul—the strength of the Puritan face to face with his God."

—ALLEN FRENCH.

(Sent by Dr. Allison.)

NEXT week, I am glad to say, we shall be able to fulfil the promise held out at the first general meeting of the B.E.N.A., in the permanent enlargement of THE COUNTRY-SIDE. How to make the best use of the space thus made available is a difficult question to settle; but we have decided to follow, as far as possible, suggestions that may be made to us by readers, and we shall be glad to receive postcards stating what new features they would like to see introduced, or what existing features should be enlarged. Our hope is that, as time passes, successive enlargements will enable us to satisfy every wish.

At the same time, I would ask all our friends to make a special effort to help us by drawing the attention of their friends, especially those residing in other neighbourhoods, to the paper. This can be done by sending copies of the first enlarged number to them; and to assist our friends in this we are willing to post free copies to all persons whose names and addresses are sent to us, accompanied by a halfpenny stamp for the postage of each copy. Considering especially the great utility and enjoyment derived from the paper in schools, I think there should scarcely be a school in the kingdom to which some friend is not willing to send a copy on these terms. I should be much obliged also if our friends would themselves send postcards to the recipients of the paper, urging them to look through it and read it.

A correspondent, F. B. D., quotes the feats of the performing mare, "Princess Trixie," in "guessing names, discerning colours, and doing sums on the blackboard," and wants to know how this can be reconciled with the theory that animals possess only "blind unreasoning instinct." Now, I do not think that any one who knows animals can regard the instincts which guide their actions as either blind or unreasoning. On the contrary, most, if not all, animals, are very quick in forming certain connections of ideas and drawing conclusions which are manifestly reasonable as guides to conduct. It was for this reason that the old controversy of "Reason versus Instinct" could never be satisfactorily decided; because there is no real opposition between the two things. Even human reasoning, when it is a guide to action, is usually instinctive.

At the same time, I should hesitate to regard the performances of a horse, which is supposed to guess names, do sums, etc., as evidence of reasoning powers. Whenever such performances have been scientifically tested, it has always been found that the exhibition was the result of the animal's perfect training to obey the

slightest hints conveyed to it by its owner's voice, manner, or actions, or by other pre-arranged devices. As, however, I have been placed upon the committee which has been formed to test this mare's powers scientifically, I will say no more on the subject now; but will only promise that, whatever the collective decision of the Committee may be, I shall in the next issue give to our readers my own views in full.

Several readers write to protest against the statement of a correspondent that "sport of all kinds must necessarily have a certain amount of cruelty attached to it." But they include under the heading of "sport," such national pastimes as football, cricket, rowing, athletics, etc.—in which it is manifest that there need be no cruelty whatever—whereas the correspondent was thinking only of that class of sport in which something is killed. It was, therefore, only the ambiguous use of a word which laid him open to contradiction; for I am sure that none of his critics would assail his view, if correctly stated, "that killing things for sport must necessarily have a certain amount of cruelty attached to it." On this point, I think, we must all be agreed, without the publication of controversial correspondence.

A reader, referring to the record in our issue of December 29th of a blackbird heard singing on December 2nd near Cardiff, writes: "Would not this be a missel thrush? I never heard a blackbird sing in December and doubt very much that anyone else ever did." It is true that December is a very unusual month for blackbirds' song. There is probably no reader who, until this winter, thought that he had ever heard the blackbird singing between the end of July and the middle of January—from the middle of July to the middle of February being this bird's ordinary period of silence. But this winter has been a remarkable one; and in addition to the Cardiff blackbird reported singing on December 2nd, we have published a record of "many readers" hearing the blackbird in the latter part of November. I myself, as well as my son, were confident that we heard the blackbird then. Also the Rev. D. Smith recorded that the blackbirds had already paired at Edenbridge in Kent by Christmas; and our records this week contain an announcement of a blackbird's nest with three eggs found on January 3rd near Rugby. There can be little doubt that the male parent of these eggs must have sung early in December. Probably, also, many readers have, like myself, noticed that the skirmishing of blackbirds in the shrubberies began this year very much earlier than usual.

On the whole, therefore, I am inclined to think that the singing of the blackbird in December this year was a fact; and perhaps, some readers who not only heard but saw the songster in that month, or in November, may be able to confirm this.

At the same time it is so very easy to mistake the song of the missel thrush for that of the blackbird that in future we will publish no record of the late or early song of either which does not state that the bird was both seen and heard. Also, because the note of the cuckoo is so easily imitated, and that of the wryneck so closely resembles the call of a lesser spotted woodpecker or of a kestrel in the distance, we will regard no record of these birds as valid, unless they are seen as well as heard. It is better to lose a good record than to publish a bad one.

"Darlington Policeman Attacked by a Water Rat" is the headline of a cutting from the *Northern Echo*, sent to me by a Darlington reader. The account describes how the rat attacked a constable named Carr—"Carr is a big man; the rat had mistaken his quarry," says the graphic reporter—and fixed its teeth in his trousers, afterwards running up another man who came to help to kill it, and fixed its teeth in his waistcoat. It was, however, again "unhooked" and killed. Now I wonder how many people have acquired from this published narrative a totally false impression of the character of that most harmless creature, the so-called "water rat" or water vole? Of course, the animal which fought the policeman was not this animal at all, but a common rat that haunted the water-side. Yet I expect that many a water vole will hereafter be killed at sight by readers of the story.

Why even a common rat should have commenced the affray by running up the policeman's leg is not easy to say. When cornered a rat will fight savagely, and horrible stories have been told of the ferocity of sewer rats when numbers of them are encountered in a confined space. But there was nothing of the kind in this case; for the policeman was on an outdoor beat at the time. There is no evidence indeed that the rat contemplated hostilities at first. In committing a technical assault by running up the police constable's leg it may have been attracted by the scent of some eatable which the man had in his pocket for refreshment during the night; and the policeman may have been standing so still that the rat regarded him as lifeless. Mark Twain, it will be remembered, quite spoils for many of us the record of the sentinel who died at his post when Pompeii was destroyed by suggesting that he was asleep at the time; but there is no need for any such imputation in this case, because both rats and mice become very audacious if you merely keep quite still for a few minutes.

A Birmingham reader (Mr. C. Veare) raises the old question of the weasel's supposed power of fascinating its prey. He heard a great noise in a hedge, and found several birds scolding a weasel. One bird especially was close to the weasel, and

wherever the latter went it followed still in this "dangerous proximity." Nothing further was observed; but my correspondent assumes that the weasel was "calling" the birds, and he encloses a cutting from the *Birmingham Post* describing how a chaffinch was seen to flutter repeatedly round a weasel, and at last, when the weasel had been killed by an onlooker, fell lifeless on the animal's corpse. In the latter case I can only suppose that the chaffinch had an affection of the heart, and that its excitement in mobbing the weasel proved fatal; while the other instance—of birds closely following a weasel along a hedge—is a common occurrence, although I have never seen it end otherwise than in the retreat of the weasel.

At the same time it is true that when birds are mobbing a beast or bird of prey some of them frequently appear to tempt fate; and I think that I have seen a sparrow hawk more than once succeed in grabbing one of its tormentors. The proceedings are usually so confused, however, that one cannot see clearly what has happened; and I always think that the unlucky bird which gets caught is a newcomer which has hurried up to see what the row is about and has gone straight into the enemy's clutches. I have also seen a weasel in the garden being mobbed by a number of sparrows and staring up at them; but on my appearance it quickly picked up a sparrow which it had previously killed and ran away. If this had happened in a hedge instead of on the open margin of a lawn, I might easily have supposed that the bird which it ran off with was one of those which were fluttering round it.

But the real reason why I cannot believe in the power of fascination with which weasels, snakes, etc., are credited, is that the process of "fascination" if it really took place would have to take place in the mind of the victim. That is to say, birds and small animals must somehow in the course of their evolution have acquired the faculty of being fascinated. Now, we know that in the course of evolution creatures can only acquire faculties which are useful to them; and I cannot conceive any circumstances in which the habit of being fascinated by natural enemies could have been useful. Every individual which began to exhibit it would, of course, be caught and killed, leaving no children to inherit the fatal defect. Therefore, I hold that it could never have become the general characteristic of any kind of creature; and, however circumstantial an account may be, I am always sure that there must be some more reasonable explanation of what was supposed to happen.

I hope that during 1907 readers will make a study of such instances as may come under their notice of plants which seem to imitate their neighbours, as in the case of the foxgloves, which several observers believed to have produced open bell-shaped flowers because they were growing next to campanulas. The possibility of this happening is not destroyed by the fact that foxgloves with such blossoms are well-known to gardeners as a variety which re-

produces itself from seed; because this variety must have arisen from some cause. And so many curious instances were quoted by correspondents, who often sent specimens in illustration thereof, that I am inclined to think that, so far as the colour of flowers is concerned at any rate, the influence of neighbours may be very real. On the top of the file, for instance, of letters on the subject, which I have put away for the winter, one from Mr. Frank Weeks, of Shepton Mallet, catches my eye. This has a pencilled note by myself, stating that the dahlia spray sent with it certainly seemed to show that the plant was influenced in colour by the dahlia plants on either side of it, from which specimen blooms were also enclosed.

Now, if any such principle of imitation were established, it would be quite different from the principles of protective resemblance and mimicry which are familiar to all naturalists. These are permanent changes of appearance which have been gradually brought about by natural selection working upon the species concerned through unnumbered centuries. The supposed causes of imitation quoted by correspondents are, on the other hand, sudden variations arising in individual plants; and, if it were proved that white geraniums are liable to turn pink when they bloom among red kinds, or that the colouring of a dahlia may be influenced by its neighbours on either side, I do not see how we could reasonably declare it to be impossible for the shape of the latest blossom on a foxglove spike to be similarly modified by influences brought to bear upon the earlier flowers.

In this week's B.E.N.A. column will be found an account which should interest all, of the inauguration of our scheme of mutual aid between town and country schools. At first sight it may seem difficult to organise a fair system of exchange; because the country children are surrounded with the wealth of nature, free for all to gather, whereas the children of our towns can "gather" nothing which has not to be bought and paid for.

But the matter equalises itself in this way. The town school numbers its pupils by as many hundreds as the country school can boast of scores; and the difficulty of making a suitable return for the common objects of the country grows small in proportion to the number of contributors available. No fewer, for instance, than 1,400 children in Peckham gained some nature-knowledge from the parcel of natural objects sent from the Stoneleigh School in Warwickshire, and among so large a number material for a suitable return should always be forthcoming; and I would suggest that copies of *THE COUNTRY-SIDE* which have already been used in the town school would be a welcome part of this. The person, however, upon whom the scheme will put a strain of work is the town schoolmaster, in suggesting, supervising and selecting his scholar's contributions. There must, however, be many who will think the labour well spent.

A reader writes from Seaton, Devon:—"It may interest you to know that I am

making notes in my copy of John's "Flowers of the Field" in the margin for further reference to *THE COUNTRY-SIDE*, such as, opposite "Ophrys apifera": C.-S. III., 37 and 312. Spider I., 125, 415, 253, so as to be able immediately to look up these flowers in *THE COUNTRY-SIDE* volumes when I desire to. I have quite a number of such memos now throughout my copy." This is a system which cannot be too strongly recommended to all readers, not only those who take an interest in plants, but also students of bird-life, insects, etc. It is an immense convenience to have all your references in one volume, so that when you wish to look up facts of special interest you will not have to hunt through the indexes of a number of separate volumes to find them.

We frequently read in the daily papers accounts of wonderful discoveries and inventions which will revolutionise large departments of human industry; and then we hear no more about them. Perhaps this will be the end of the invention by a Mr. H. R. Hemming of "a new method of preserving all kinds of perishable food." According to the representative of one of the papers which report this discovery, "fruit that was gathered in 1904 tasted and looked as if just gathered," and Mr. Hemming is reported as claiming that his process will preserve food in this way "as long as the containing vessel will hold together." As the process is said to be merely one of complete sterilisation, there should seem to be no reason why the containing vessel should not be of glass—and just think of the possible results of this to science? Rare and perishable specimens would by this process be rendered imperishable, and all the difficulties of preserving flowers, fruits, fungi, etc., in a fresh and lifelike state would disappear. We must therefore await further news from Mr. H. R. Hemming with interest.

E. Kay Robinson.

From a Cornish Window.

The west wind, loitering, hums the song it learned
 Out on the broad Atlantic in its flight;
 Around, the trees droop languid in the light
 The pale moon sheds from whence the sunset burned.
 Afar, the steeds of Ocean, shoreward turned,
 Put on the silver harness of the night
 And sweep in serried ranks towards the white,
 Still cliffs that wait their coming unconcerned.
 Along the hollows float slow waifs of sound—
 Echoes of echoes—murmurs of the breeze,
 Or drowsy chatter of the birds, maybe.
 While down the valley, where deep shades abound,
 The noiseless streamlet like a felon flees
 On shuffling silver feet towards the sea.
 BERNARD MALCOLM RAMSAY.

NOTICE.

Full particulars of the enlargement of *THE COUNTRY-SIDE* will be found upon the back cover of this issue.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Tree Lore.—In addition to the traditions mentioned in the charming article on "Tree Lore" in your issue of the 5th, may I say that a village boy once told me of a legend that the leaves of the aspen tremble because the Cross was made of its wood—

"And of this deed
Its leaves confess

E'er since a troubled consciousness."

I do not know where he found this quotation.—M. C. L. [The tradition is familiar to me, but the lines are new. Perhaps some reader can say where they come from.—ED.]

Fertility of Crossed Hybrids?—Successful experiments in the breeding of hybrid with hybrid, jungle fowl and domestic fowl have been carried out lately in Colombo, Ceylon. A hybrid hen laid 15 eggs; and of these eight were put into an incubator, seven proving clear and one addled; and seven were put under a sitting hen. Of these two were addled four clear, and one chick hatched out. It lived for eleven days, but being evidently a weakling could not stand the long shore winds of Colombo. Charles Darwin would have been intensely interested could he have known of this proof of the possibility of hybrid crossed with hybrid producing offspring, as he contended that hybrids to hybrids proved always sterile. Our Ceylon jungle fowl is the *Gallus Lafayetti*, a lovely bird, very shy and wiry, and particularly quick on his legs and a strong flyer; it is peculiar to the island.—Yours, etc., ERICA, Ceylon. [I doubt whether a cross between jungle fowl and a domestic fowl can be regarded as a real hybrid, seeing that our domestic poultry are believed to be descended from jungle fowl. From the incident recorded above Darwin would most probably have been inclined to think that the jungle fowl of Ceylon was the original parent of domestic poultry.—ED.]

An Ice Problem.—On page 107 of THE COUNTRY-SIDE you state that the faculty of moistened ice to bind has been discussed without any decided result except calling the process regelation. I should think the explanation is as follows:—Each surface of the ice is dotted with minute holes and irregularities. These are filled with water "moistened." When placed in apposition the water freezes, and, consequently, expands, with the result that the opposing surfaces of ice are held together by innumerable microscopic mortises and tenons; the mortises being the holes in the blocks, the tenons being the recently-frozen water that filled such irregularities, and owing to their increase in bulk from freezing they fit very tight.—YARNOLD H. MILLS, F.R.C.S., Haverfordwest.

Do Herons Eat Buds?—There is a herony close by, in some beech trees, and under the nests are to be found quantities of pellets about the size of a walnut. These pellets do not, as one would suppose, contain any animal matter, but are composed of some sort of vegetable fibre, which looks rather like that of a

young beech-bud crushed small. The pellets also contain small stones. I can only suppose that these pellets are ejected by the herons, as they are only found in spring, when the nests are occupied.—Miss M. D. HAVILAND, Thomastown, Kilkenny.

A Good Catch of Pike.—It would be a nice arithmetical calculation to estimate the prospective number of millions of millions of fish saved by the day's sport which accounted for the fifteen pike or jack in this picture. For this voracious fish richly deserves its nickname of "freshwater shark," and is often caught with several fish inside it. At the moderate estimate of 7,000 adult fish per annum for these fifteen specimens, multiplied by the number of eggs which each female fish would have laid and the great number of years which pike are known to live, we very soon reach a figure which goes almost beyond arithmetic. Yet such calculations are always fallacious; and although in the confined waters of a pond or a narrow stream pike, if allowed to multiply,

from Handcross, Sussex, of December 13th, that A. N. Turner says that he (or she) heard it distinctly give fourteen or fifteen notes, and it is mentioned that the time was 7.15 a.m. Is it not possible that there was a cuckoo clock in the neighbourhood, and that it was fifteen minutes late, in which case it would strike seven and give fourteen notes?—CONSUELO WALKER, The Common, Cranleigh.

The Puss-Moth Caterpillar's Defences.—In the article (p. 76), on "Caterpillars' Tricks," one very effective method of this caterpillar's defence was not mentioned, viz., the power to eject formic acid from a short transverse slit under the "chin." All Puss-Moth caterpillars, however, do not seem to exercise this power.—C. NICHOLSON, Chingford.

Use of the Starling.—With regard to the suggested wholesale destruction of birds by the Beds. Chamber of Agriculture, probably that county has not been visited within recollection by a plague of cockchafer, which will give the appearance of December to the country

side in June, all the trees being bare, no fruit crop at all, and the corn crops reduced to half or less than half the average from the grubs eating the corn and grass roots. This happened a few years back in Schleswig-Holstein before the value of the starling was realised, and there not only are the starlings now protected for the destruction of these insects, etc., but one may see hundreds of nest-boxes put up for their special accommodation. There one may see large flocks of these birds following the plough backwards and forwards, eating the various grubs turned up in its progress. This happens in a country where boys who are growing to be farmers are educated in special schools before starting their work on the land.—PRO-STARLING.

Can Insects see Colours?—Your notes on this subject in the issue of January 5th seem less well-considered than usual. The lens of the camera can hardly take

any view on colour matters. It is the photographic plate, i.e., the sensitive agent, or receiver, that fails to agree with the human vision of colours. It is pretty well established that human colour perception is due to three sets of sensitive organs in the retina, each acted upon by wave lengths within certain limits. Doubtless your meaning is that insects have a sense of luminosity only, so that their pictures of the outside world are in monotone. This may be true, but if so, it is not in the lens, but in the retina (and perhaps in the brain or cerebral ganglion) that the difference comes in.—HENRY M. SAYERS, Streatham. [Yes, my comparison of the lenses of the compound eyes of insects with the lens of a camera as failing to register the difference between blue, pink, and white was, of course, clumsy. The comparison should have been between the retina and the plate behind the respective lenses, as Mr. Sayers suggests.—E. K. R.]



Photo.]

A Bag of Pike.

[G. W. Bradshaw.]

These voracious fish if allowed to multiply will almost exterminate other fish in a pond.

will almost exterminate other fish, it is often surprising what good fishing may be had even in rivers where every reed-bed hides its lurking pike.

Cuckoos out of Season.—May I tell a story that bears on the question of cuckoos being heard out of season? A few years ago I was driving with my husband on his morning round in the country. I was sitting reading in the dog-cart while he saw a patient. I was deeply interested in my book, when suddenly a cuckoo began to call. I was very astonished, and listened to it with great surprise. It went on calling for some time—a very long time it seemed to me. When my husband came out of the house, ten minutes or so later, I said, "Isn't it very early to hear the cuckoo?" I heard it calling for quite a long time ten minutes ago." He smiled, and replied, "Oh, that was a cuckoo clock somewhere in the house, and was striking eleven o'clock." But it was such a life-like note (or notes) that had my husband not explained it to me I should have firmly believed that I had heard the cuckoo in February. I notice in the report

A Trap for Woodpigeons.—This illustration represents a lofty erection for the purpose of catching woodpigeons on the Palombieres, a hill so named from the number of woodpigeons (*Palombs*) that are there trapped in autumn. A man is placed on the top of the high pole (about 100 feet high), and when the flights of woodpigeons are seen approaching he throws up a wooden kite which causes



Photo.] [L. S. Anstruther.

A Treacherous Danger Signal.

Lofty pole, from the summit of which in France, a man throws up a wooden kite when flocks of woodpigeons are seen approaching, thus scaring them down into nets between the trees.

them to fly lower and get into nets between high trees. This is done in various parts of France, but the photograph from which this picture is reproduced was taken at Baguères de Bigorre in the Pyrenees.—L. S. Anstruther, Villa St. George, Billere, Pau, Basse Pyrenees, France.

Mistletoe on Elm.—There are many lime and elm trees all close together in a large garden near here, and the limes are covered with mistletoe, but the elms have none on them.—T. OLIPHANT.

Hen Swallows its Tongue.—In endeavouring to swallow a long thread of cotton, which had got wound round and round its tongue, a hen succeeded in actually swallowing the latter. Needless to say, this caused the hen's death.—A. G. HIGGS, Cottenham Park, Wimbledon.

"Animals Eating Fungi."—Rooks will devour young "button" mushrooms. I have two or three times caught them in the act, and should have thought that the grubs often contained in the mushrooms would have attracted them had not the fungus been quite young and fresh.—LOVE HUNTER, Norlands, Thomastown, Co. Kilkenny.

The Question of Sex.—Your correspondent Mr. Burrell Heale, on the question of sex (Vol. III., p. 299), appears to draw from the well-known action of bees deprived of their queen an inference that by feeding the grub on royal food they are able to change the sex, but he forgets that the worker is not a male but a female. The change of food consequently does not produce any change of sex, but merely produces a fully-developed female from a grub which would, under ordinary circumstances, have produced a barren female. There is no evidence to show that any amount of special feeding could produce a queen or even a barren female from a male larva or egg. Your correspondent, therefore, cannot draw from this action of the bees any argument that Lord Avebury is incorrect in what he says about the solitary wasp, *Vespa muraria*. Again, his observation on the sex in the case of fowls and pigeons, even assuming it to be correct, does not help him, for the cases are quite different. It is one thing to say that sex may be determined by circumstances occurring before the egg is laid (or, more correctly, before the egg is fertilised), as, for instance, health and good feeding in the case of fowls and pigeons; it is quite a different matter to say that after fer-

tilization of the egg the sex may be changed by subsequent treatment of the egg or larva.—RICHARD E. TREBILCOCK, Geelong Field Naturalists' Club, Victoria, Australia.

Bees and Colours.—With reference to the account of bees alighting on coloured drawing of flowers, if the drawing was made with moist water colours it is possible that the scent of honey was present. Honey used to be used to keep these colours moist, and in some cases may still be used.—E. COOK, Walden Lodge, Devizes.

The Glow-worm in Winter.—I have a glow-worm still alive, which I captured at Yalding, Kent, on August 13th last. I have seen the light from this insect several times lately, when it has been crawling in its cage, but it gives a much brighter light on being handled, which I suppose irritates it. I have also known it to show a light in the daytime, when I have held it between my finger and thumb, and on taking it out of the glass last night (January 4th) it shed a bright light.—R. W. PETIEN, London, N.

Unusual Mackerel Fishing.—The mackerel fishing has been a great failure here on the West Coast of Ireland during the entire autumn; but for the past three weeks (writing on December 21st) it has been unusually good—the best for twenty years—and the fish now being caught are like those which should have been caught in September and October, being very good, white, and in prime condition; whereas the fish usually taken at this season is black, and called here "cocks." The fishermen say that they are the male fish, and that the seasons have gone wrong, because the fish which for the past two months ought to have been taken, have only turned up now. This applies to the whole west coast of Ireland from Mayo to Cape Clear. This kind of fish, in such good condition, has not been taken here before.—R. T. ROYCROFT, Skibbereen, Co. Cork.

Yew Tree Poisoning.—Being a regular and interested reader of THE COUNTRY-SIDE, I thought the accompanying paragraph—cut from the *Newark Herald*—would be of interest, as it shows that in some cases, if not all, the yew is fatal to animals:—"Yew Poisoning.—A little over a week ago three young horses, the property of Mr. W. Warburton, of the Manor Farm, near Sturton-le-Steeple—broke out of the field in which they were running, and got down to Littleborough. Here they seemed to have browsed during the night on the yews overhanging the wall of the garden belonging to the farm occupied by the executors of the late Mr. Gourley. Next morning one was found dead, but careful veterinary attention has succeeded in saving the others."—W. LIDGETT, Newark. [The point of interest in this account is that the runaway horses were poisoned by browsing upon yews overhanging the wall of the garden of a farm, where, presumably, the farm-horses must always have had the opportunity for a fatal meal.—ED.]

Norfolk Rarities.—Among the most valuable specimens in the King's Lynn Museum are the nest and eggs of Savi's Warbler, found in Norfolk as late as the year 1848, by the late Rev. W. Maxey Allen, vicar of Shouldham, Norfolk. This gentleman and a great naturalist went to "Poppy Lot," situated halfway between Southey and Methwold. This was a fen of several hundred acres, which has since then come under cultivation, but at that time it had sedge all over, growing from two to three feet in height, and was intersected by large drains. On the death of Mr. Allen in August last, his splendid collection, including this warbler's clutch and nest, and nearly every known kind of West Norfolk bird, the sea-birds being exceptionally fine and in good order, was presented to the King's Lynn Museum. The Hen and Montague Harriers used to build in "Poppy Lot," and in the early part of last century their nests were very common. The Rev. Mr. Allan once found a kestrel building on the ground, there being no trees in the neighbourhood.—A. L. BONAS, Castleacre.

Birds' Snow Baths.—In the deep snow which covered the ground after Christmas I several times saw blackbirds indulging in a "snow bath," diving head foremost into the snow and scattering it over their wings and backs with evident enjoyment.—(Rev.) C. F. THORNEWILL, Whitchurch, Salop.

"Do Kestrels Drink?"—My kestrel both drinks and bathes readily, and I have to thaw his water dish every day in frost. If forgotten he stands beside it and screams till he gets a drink. He loves a bath and drenches himself, but shivers if not put into the direct sunshine to dry himself.—ELLA W. GRAY, Polmont Station.

Brandy for Goldfish.—One of my goldfish fell out on the floor lately from a height. I picked him up and put him in a pail of clean water, when he floundered about, sometimes on his back and sometimes rolling over and over. I had read that brandy brought goldfish round, but did not know if it was to be given diluted or in what quantity, so I filled a teacup with clean water, put three drops of brandy in, and laid the fish in. In about a minute he turned right side up, and when I put him back in his tank after about five minutes he was all right again. I hope this hint may help others.—ELLA W. GRAY, Polmont.

Magic Clovers.—People who attach a superstitious value to "four-leaved shamrock" usually imagine that it is very rare. All the trefoils and medicks, however—several kinds of the latter being sold and worn on St. Patrick's Day—readily produce more than three leaflets in a leaf, if growing at all luxuriantly. Another superstition connected with the medicks—small clover-like plants with, usually, little round yellow flower-heads—has to do with the dark red spots on each leaflet, which are especially conspicuous in the spotted medick, *Medicago maculata*, and suggests blood-stains. Hence this plant is sometimes called "Calvary clover," although the name properly belongs to a foreign medick, *Medi-*



Four and Five-leaved Clover.

A group of leaves of the Spotted Medick, sometimes confounded with Calvary Clover.

icago echinus, much cultivated as a curiosity on account of this and other peculiarities which have a fanciful connection with the Crucifixion. The illustration of a group of leaves of the spotted medick, shows these spots well; and, in addition to two ordinary leaves of three leaflets each, contains one "four-leaved" and two "five-leaved" shamrocks. There must be plenty of "magic" in such a group.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, JANUARY 26, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 6d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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Birds We Have Known.

THE JACKDAWS, "IMP" and "JACKO."

By MAGDALEN F. P. TUCK.

"And the priests with awe, as such freaks they saw,
"Said, 'the devil must be in that little jackdaw.'"

OF all birds, great or small, gentle or otherwise, staid or frivolous, is there ever a one to equal the jackdaw as a pet? A humourist down to the ground, sagacious as a dog and growing greatly attached to his owners he is truly the beau ideal of a bird love. Many adopted bird children have I had, but my jackdaws were loved with a love never bestowed upon any of the other birds, charming little beings even though most of them were.

How well I remember the advent of our first jackdaws. It was a lovely summer's evening and we were summoned from our game of tennis to go to father. We ran up all curiosity, and a straw flail, which contained something alive and breathing, was given carefully into our eager hands. With little squeals of delight we at length cautiously drew out two bunchy, dishevelled, but to us, altogether charming baby jackdaws. Our long suffering father, knowing our great desire for "a jacky of my own" had carried the two hoary headed little rascals in his hand all the way from a neighbouring church, four miles distant. We promptly decided which infant should belong to whom, and that knotty point once settled, the imps were borne off in triumph to their new home, a large cage in the stableyard. More matter-of-fact and accommodating birds I have never met. They settled down at once, took to their new diet (soaked dog biscuit) most heartily, and next morning greeted our approach with flapping wings, hungry squawks and frantic attempts at strangulation in the wire-netted front of the cage. Within a couple of days "Imp" and "Jacko" knew us perfectly well, and had not the slightest objection to being carried about in our arms for their daily airing, and after a week or two they were allowed full liberty in the day time; only being shut up at night, as a safeguard against possible night-raiders. To this proceeding, by the way, they both had a strong objection, and when dusk came on would hide themselves in the most unlikely places and we would find a tucked up ball of feathers where one would least expect it.

They were characters those birds! Without an atom of fear in their composition and having impudence galore they won the hearts of the household, from my mother down to the garden boy, whilst they grew so attached to my sister and me that really on occasions they were quite a nuisance, because wherever we went, they desired to go also, and many a time when going out for the afternoon have I had to return because one or other of the birds had espied me from afar, and insisted upon following. Going for short walks and into the village they were allowed to come, and the village folk were quite used to the sight of one or other of us with one jackdaw on the shoulder and the other flying, calling, overhead.

Both birds had a great love of washing and would sprawl in their bath for ten minutes at a time, after which, slender, ragged, and rakish looking they would flutter on to anyone's knee or shoulder, preen themselves lazily and go to sleep. And Oh! but they were mischievous. Anything that they could steal they would; luckily, we never lost anything of value, but that again was not the jackdaws' fault, and as they practically were free of the house, I think we were lucky. A friend of mine once found her watch, a brooch, and various other small articles ranged close on the edge of a window-sill; underneath was a deep water butt; if Master Mischief had taken it into his head to push them over—well, who in the world would have thought of looking for lost jewelry in a water butt? After that, all visitors were duly warned of the thievish propensities of certain of our family.

I remember Imp always regarded my father's cigarette with covetous eyes; if it were laid down only for a second he would sneak it, and once, in a very reckless mood, he swooped past and snatched the cigarette out of my father's mouth when he was strolling round the garden. They were also very fond of alighting on our heads from mid-air, and enjoying a ride in this fashion—a very ruinous process for hair-nets, by the way. One day—oh tell it not in Gath—a middle-aged lady was enjoying the air in the garden, minus a hat, when suddenly a jackdaw appeared from nowhere in particular and settled on her head. But alas! things are not always what they seem, and Jack's perch, doubtless to his wonderment, slipped right to one side!! The insulted lady was extremely wrath, perhaps not altogether without cause, and as we were away at the time, the offender was kept in durance vile until our return.

Imp, my particular infant, had one singularly pleasing little trait. Ankles, anybody's ankles, more especially if clad in open-work stockings, were to him perfectly irresistible.

Many a time when drowsing deliciously in the garden on a summer's afternoon have I been rudely and effectually roused by a triumphant kjack, and agonising digs with an abominably strong beak would be dealt in quick succession at my thinly veiled, summer-clad ankles. Little demon! How he used to hurt, very often breaking the skin, and he would not be repulsed, returning to the charge with renewed vigour again and again, until as a last resource I would draw my ankles up and sit cross-legged upon them after the fashion of a Turk.

Then he would retaliate by taking a perch on my shoulder, and would either tweak an ear hard or pull little strands of hair down. Imp was distinctly more hoydenish than Jacko, and a far more restless individual than his brother.

Jacko, now, would sit happily on one's knee, crooning happy little croons for an hour at a time, quite contented so long as one would tickle his little grey pate.

But Imp, oh, dear, no! perpetual motion and someone to torment was his idea of bliss. Both birds, I remember, laboured under the happy delusion that, somewhere upon our persons, did they only seek long and earnestly enough, they would find treasure trove of an insectivorous and edible description.

So, buoyed up always by this unflinching hope, they would prise apart our fingers, peer anxiously down the back of our necks, scan the tresses of our hair, and generally carry out investigations of a minute and searching character, and no amount of persuasion on our part would ever convince them that that which they sought so ardently was not lying *perdu* somewhere about us.

The quaintest sight of all, however, was to see one of the rascals drive our dignified cat away from his saucer of milk. Although a mighty hunter of game, the worthy Thomas could not understand these precocious beings and one of them could rout him at any time. Perhaps he, also, like the priests, thought that "the devil must be in that little jackdaw." I have seen them several times, when he was lying unconsciously sunning himself, steal up and nip his tail slyly. Fear of man or beast was a totally unknown quantity to them.

But I could write concerning Imp and Jacko and their successors—who in ways and wickedness were their predecessors over again—for hours, only space forbids. Let me say good-bye to them again as I saw them last, perched happily on the roof with two naughty little grey heads cocked well on one side. For when our house was vacated by us in August and September, Imp and Jacko, missing their familiar friends about the place, first harkened unto, then finally obeyed "the call of the wild," and joined the flights of other jackdaws wending their way to far distant southern climes.

Profitable Poultry Culture.

By "Chanticleer"

Damaged Food—A Warning.

It is astonishing the quantity of damaged food which is given to poultry with serious results. It is an error which many fall into, whilst not a few give their birds such "cheap" feeds in ignorance of the disastrous consequences.

A fowl fed on damaged grain, for instance, may suffer from lack of nourishment, and at the same time have its digestive organs disorganised from overloading them with matter which must be avoided, being dangerous to the system. Feeding in such a way produces debilitated fowls, which are incapable of resisting disease, and once let sickness get a hold on poultry it is difficult indeed to remedy matters.

Good sound wheat can be bought cheap enough, and I would rather that the birds had half their proper quantity than damaged grain, such as damp, burnt, or bad grain should be given, which is really dear at any price. It is an excellent rule to follow not to give anything to the fowls that we should not be willing to taste, or, if need be, eat ourselves. Cheap foods are cheap in name only, for a large proportion is generally wanted; in fact, the damaged food will prove the dearest in the end.

I always advise poultry keepers to give poultry, whether prize or utility stock, the best care you know how to give, feed only on good wholesome food, and give plenty of clean water to drink, and there will be less disease to fight. Many diseases are contracted by poultry through eating tainted foods, and, by means of the eggs, are imparted to human beings, so that one cannot be too careful what we feed our fowls with if we seriously consider that we are in reality feeding them in order that the food so fed shall be converted into food for ourselves, and it is questionable if many serious ailments cannot be traced to feeding fowls with damaged foods.

Influence of Exhibition Poultry.

One often hears statements that poultry shows have done unmitigated harm to poultry, and that before we had exhibitions fowls were better than at present, and I think it advisable to attempt to refute such erroneous impressions, especially as I conscientiously contend that the influence of the exhibition of poultry upon poultry culture has been beneficial, for not only are breeds more numerous but decidedly of a higher average excellence, whilst I would give all credit to poultry breeders and fanciers who have preserved for us pure breeds for poultry keeping.

These men may have been guilty of extravagances by their insistence upon useless fancy points and abnormal developments of what was doubtless an excellent and useful quality, such as the length of leg in the game and Langshan breeds, increase of comb in Minoracs and Leghorns, development of crest in Polish and French breeds, impeding the eyesight, and the excessive development of leg feathers in Cochins and Brahmas, so as to impede their locomotion.

Against all this, however, we have the benefits which poultry culture has received at the hands of fanciers and their annual exhibitions. These feathered festivals, it will be admitted, attract public attention

to poultry culture and increase the ranks of breeders which cannot fail to improve the industry. "What have fanciers done?" asks a reader. First of all, they have kept up purity of strain, and thus prevented the merging into mongrelism.

My weekly notes have proved beyond a doubt that there are great advantages in the existence of pure breeds with their definite and permanent characteristics. If there is one point I would emphasise, it is that the efforts of poultry fanciers have enabled us to choose a breed suitable to our peculiar requirements, climate, soil, and surroundings.

Then it enables us to make strong first crosses, for who will deny there is a great difference between the offspring of two pure-bred birds' races and of two mongrels. The produce of the former is invariably hardy and profitable, can be reared under almost any circumstances, and are precocious layers.

The work of poultry fanciers for the past



A Seaside Memory.



Home Sweet Home.

Pretty effects with leaf and seaweed impressions.

half-century has been to maintain the purity of our breeds, and the utilitarian properties have not been entirely neglected, whilst a love for the beautiful has ever been predominant. Evils which I consider should be checked are over-showing, which so often ruins fowl's constitutions, and renders them unable to reproduce their species, also inbreeding, which weakens the constitution of our poultry, although I should add even these birds are revived again in the first cross.

Pure breeds of poultry can be bred up to yield a high return of eggs and yet breed perfectly true. For the improvement of mongrel or mixed breed yards a pure male bird is, of course, invaluable, but the better laying strain the sire comes from the better will be the result.

In conclusion, exhibitions of poultry have fostered (and will continue to do so) a great interest in poultry keeping generally, and no section has been more prominent in disseminating a love for aviculture than poultry fanciers.

Amateur Photography.

Novel Method of Preparing Post Cards.

In an early number of THE COUNTRY-SIDE "W. F. K." described the simple method by which effective leaf-impression photographs may be made. Some time ago the writer employed a similar process for beautifying holiday and other snapshots. By means of a little care and arrangement very pretty and acceptable post-cards may thus be made. First the snapshot negative is selected, and, the desired portion of the picture having been chosen, a mask is cut. Any stiff opaque paper may be used for this purpose, and the mask may be square, circular, or any other shape which may seem best to suit the subject.

In printing, the negative is first placed in the frame, then the mask, and finally the paper or postcard. When this print is finished take it out of the frame and set it aside in the dark. Now substitute a piece of plain glass in the frame for the negative, and upon it arrange the dried leaves as effectively as possible. Lastly, take the half-finished print and cover the picture portion with the piece of paper which was cut from your mask. Place it upon the leaves in the printing frame and finish printing. Then finish the postcard according to the instructions issued with the packet.

Care must be taken carefully to adjust the square or circle of paper over the half-finished picture, or the edges will be "cut of register." But by cutting a special piece of paper somewhat larger than the hole in the mask some pretty effects may be gained by the introduction of a white border.—P. COLLINS.

Our Photo. Competition.

NOVEMBER AND DECEMBER RESULTS.

The prize of one guinea in the November competition has been awarded to Mr. W. J. Masters, 13, Hobart Cottages, Weymouth, for a fine snapshot of swans, and the similar prize for December to the Rev. E. T. Clark, Washfield Rectory, Tiverton, for a decorative study of a hedge-sparrow's nest.

Photographs intended for the January competition should have their titles and names and addresses of the senders written clearly on the back, and should be addressed "Photo Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Week's Wild Life in Pictures.

(See page 151.)

IN spite of their large size and their beauty, the gulls are not always easy to identify, because they go through large changes of appearance and take a long time in putting on mature plumage. In the case of the common gull (1) this operation takes nearly three years, and meanwhile it wears the mottled livery shown in the illustration, being then only distinguishable at any distance from immature herring gulls or lesser black-backed gulls by its smaller size.

2.—The common pond snails are among the largest of the freshwater snails, having univalve shells. They are found in many stagnant pools, where they may be seen on a warm day, like most of their relatives, floating with upturned shells on the surface of the water, but sinking instantly on being disturbed. Owing to this snail's sluggish nature the shell is generally encrusted with a vegetable and mineral deposit. The animal on being excited will often discharge a violet coloured liquid. According to a census made by Messrs. Taylor and Roebuck, it was known in forty-eight counties of England, Scotland, and Ireland, but there was no record for Wales.

3.—In the country a fall of snow has interest always from the revelation which it makes of the movements of wild creatures; and those who have had practice in reading the foot-writings in the snow learn many things about wild life in winter. There is interest, too, in distinguishing the footmarks. Thus the depth and shape of the footprints shown in the picture would easily distinguish them as made by the rook, because the long hind claw betrays the perching bird, and among perching birds only the rook walks so heavily and steadily. Even the carrion crow hops more often than it walks.

4.—The hazel is the very earliest of our British trees to bloom, and already in the woodlands you will find all the nut bushes decorated with these swinging male catkins, which grow longer with each mild day. As yet, however, they are smooth and hard, the little blossoms still hiding behind the close-fitting scales which form protective armour against returns of frost and snow, overlapping each other like the scales upon a snake.

5.—When the ground is covered with snow the wild fowler reaps his harvest; because ducks of all sorts must range wide for food, and the reflected light from the snow makes the birds more plainly visible in the dusk of flighting-time. Then, too, the widgeon is almost always distinguishable as it flies by the peculiar whistle, "wee-oo," from which, no doubt, the name of "widgeon" is derived. The drake is a handsome bird, with delicate shades of grey, reddish buff crown, and conspicuous white patch and glossy green "mirror" on its wings. By the two last features and grey beak tipped with black, both male and female widgeon may be distinguished from all other ducks.

6.—It is at this time that the woodlands begin again to be attractive with signs on every hand, in the fresher green of the rosettes of wood-violet and primrose

leaves, that the new life of the year is stirring. At the same time, the weird grace and majesty of the great forest trees is still unveiled, and to pace alone through natural aisles that are pillared with such monarchs of the past as these famous beeches of Burnham compels the mind to the mood of worship which the ancients expressed in the cult of the great god Pan. Of all woodland trees the beech, perhaps, flings aloft the airiest canopy and sinks to decay in age most grandly.

7.—The early moth is a dingy insect, perhaps; but it is the first-born of the year, and on a mild night in January you may always be sure of finding it by any hedge-row, flickering on flimsy wings before your lantern or showing up conspicuously in the darkness as it sits with uplifted wings on some thorn twig. The spidery female with her tiny rudiments of wings is less easy to discover; but with a little patient examination of the hedge you can generally find as many of both sexes as you wish to see. They are the first fruits of the great crop of moth life that the spring will soon bring forth.

Additions to the Natural History Museum.

By R. Lydekker.

FOR some years past the officials of the Marine Biological Association's laboratory at Plymouth have been endeavouring to discover the best means of ascertaining the ages of individual specimens of British food fishes. In the case of the plaice it has been found that the most certain clue is afforded by the number of rings in the ear bone or otolith. In the pollack, on the other hand, the number of rings in the scales appears to yield the most trustworthy age test. To illustrate these modes of reckoning, and likewise to display the rate of growth in the two species referred to, a case has recently been installed in the central hall of the museum containing a large series of specimens of both plaice and pollack at all stages of post-larval development up to what may be called sizeable fish. Side by side with the specimens of plaice are shown the ear-bones at different stages of development, together with photographs enlarged to a size sufficient to exhibit the annual rings of growth in each bone. Similarly, in the case of the pollack, individual scales and enlargements of the same are displayed, so that the visitor can see for himself the manner in which the age-estimate is made. In connection with the plaice, it is worthy of mention that, as may be seen by the specimens exhibited, the rate of growth of the young fishes for a considerable time is approximately equal in the two sexes. At a later period, however, that is to say, after the third year, the rate of growth in the female becomes much more rapid than in the opposite sex. All the specimens shown in this interesting exhibit were prepared and sent by the Marine Biological Association at Plymouth.

How a starling with a beak fully two and a half inches in length could possibly manage to feed itself is little short of a mystery. Nevertheless, a specimen recently added to the collection of abnormalities indicates that a bird thus malformed can manage to maintain existence, at least for a time. The specimen in question is the skull of a starling which frequented a garden at St. Margarets-on-Thames in the early summer of 1905, where it was eventually killed by a fox-terrier. The beak, which, as already stated is 2½ inches long, is curved almost like that of a curlew, and has both mandibles equally well developed. The reason of the abnormal growth is apparently due to an injury—probably a shot wound—to the lower half of the beak. The bird was observed to have considerable difficulty in feeding; and the mode of its death leads to the conclusion that it was in a weak and emaciated condition. The specimen was presented by Mr. P. Stammwitz.

One of the exhibits which always attracts a large amount of attention on the part of the public is the series of domesticated dogs in the North Hall. This has been recently increased by a beautiful borzoi—the gift of Mr. George Pauling—mounted in a recumbent position by Rowland Ward, Ltd., of Piccadilly. More important still is a specimen of the giant elk, or moose, of Alaska, standing 6 feet 5 inches at the shoulder, presented by the Hon. Walter Rothschild, and set up by the firm just mentioned.

Crows Kill a Rat.—A large rat was seen to leave the refuse heap by the sewage works at Castleford, Yorks, and set off at a great pace across the ice covering the flooded field below. Before it had gone far seven or eight crows went after it, and commenced swooping down upon it almost in turns. The rat tried its best to escape, but they continued to pounce on and strike it with their beaks until they finally killed it, and one old bird then picked it up, and shook it like a dog. The crows then left it, though one returned a little later.

British Wild Life Stereographs

3d. EACH, POST FREE.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard's Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes; 11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat; 21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs; 31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

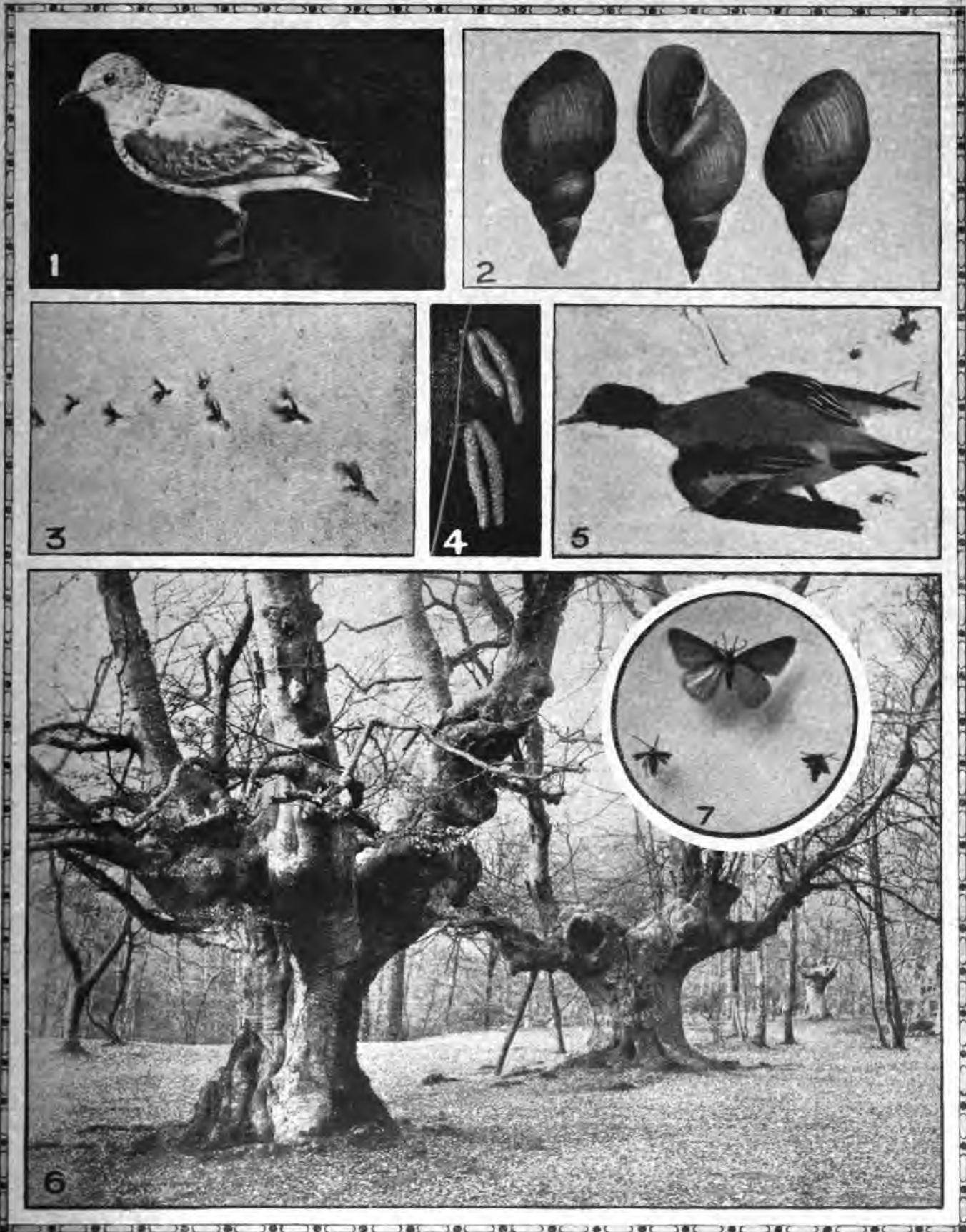
3d. EACH, POST FREE.

WILD FLOWER SERIES, 2s. 6d.

1, Musk Thistle, Wayfaring Tree, etc.; 2, Sweet Woodruff, in bloom; 3, Wild Hyacinth and Dewberry Bramble; 4, Broad-leaved Garlic and Yellow Dead-nettle; 5, Dandelion, in fruit; 6, Red Campion, amid woodland herbage; 7, Butter-bur; 8, Wood Sorrel, amid herbage; 9, Cuckoo Pint; 10, Wild or Dog Rose.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 150.)



1. Immature Common Gull, *Larus canus* (B. Hanley). 2. Common Pond Snail, *Limnaea stagnalis*, life size (Copyright). 3. Footprints of Rook, *Trypanocorax frugilegus*, in Snow (J. H. Crabtree). 4. Male Catkins of Hazel, *Corylus avellana* (Copyright). 5. Widgeon, *Mareca penelope*, Drake, in Snow (O. Grabham). 6. Burnham Beeches (F. H. Worstley-Benison). 7. One Male and Two Females of the Early Moth, *Hybernia rupicapraria*, reduced one quarter (Copyright).

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three coupons (like that on page 17), out from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Unanswered Questions.—Correspondents whose queries remain unanswered will find the reason in the "special announcement" above.

"Mouse" Identified.—The little animal enclosed, reddish-brown above and white below, with short ears hidden in its fur and short tail, is not a mouse, but a vole—the bank vole, *Microtus glareolus*. If people would bear in mind that mice and rats have conspicuous ears, which voles have not, the harmless water vole would not be so often hunted and killed as a "rat."—(to H. Fox.)

"Scoured" Wheat for Seed.—Practical farmers say that it would be risky to use as seed wheat grain which had been passed through a "scourer" preparatory to milling, although the loss of the beard on the grain might not in itself affect the germination. An experimental sowing of a few grains in a flower-pot would have best settled the question.—(to B. S. CLISSOLD.)

Small Jackdaw.—Your jackdaw must be full grown by this time; and if it measures only eleven inches, it is an undersized specimen. The average length is thirteen inches, I think.—(to N. FOSLAND.)

Aquarium Management.—We hope to publish an article—and your questions could not be answered in less—on this subject shortly.—(to H. GOODWIN.)

Do Cats Chew?—No, not as we understand the word. Their back-teeth are strong and armed with points which crush bones; but they only bite pieces of flesh sufficiently to render them easy to swallow.—(to F. E. LACE.)

American Quails in Britain.—No, although many landowners have made efforts to establish the Virginian quail in Britain, none has succeeded.—(to H. GAUTREY.)

Freak-egg Layer.—Yes, there is undoubtedly "something wrong" with a hen which lays a soft-shelled egg with a long tail to it; but this "something" may be purely temporary, and will not necessarily impair the value of her future produce.—(to S. NORTON.)

The Homing Instinct.—No, it is not surprising that your hen homing pigeon should have abandoned her young, when first given her freedom. In breeding "homers" man has so cultivated the homing instinct natural to the pigeon until it masters even the maternal instinct in most cases.—(to T. OLIPHANT.)

Lunar Halo.—The phenomenon described was evidently an interesting form of lunar halo produced by particles of frozen moisture floating in the atmosphere. The exact cause of halos is still imperfectly understood beyond that they are due to the refractive properties of minute ice crystals arranged at certain angles in regard to the light of the sun or moon. Mock suns, sun pillars, and mock moons arise in the same way. Your correspondent does not say if the circle of dusky cloud was bounded by a ring or rings of light, and if so, whether the latter were tinged with prismatic colours. The darkness of the "cloud" was probably merely an optical effect, since had it really been of any density it would have veiled the lunar disc to an appreciable extent. The obliteration of stars in the immediate neighbourhood was no doubt entirely due to the overpowering light of the moon which was "full" on that evening.—(to Mrs. F. M. LUNN, Chandlersford.)

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

SWALLOW, one seen again near Havant, Hants, December 21st, and two SANDMARTINS up to December 24th, and one as late as January 16th.—(H. Beeston.)

GOOSANDER, female shot near Eye, Suffolk, January 2nd.—(H. C. Rowling.)

GREAT NORTHERN DIVER, shot at Bridgewater, January 4th.—(W. A. S.)

BITTERN seen at Hillington, Norfolk, January 10th.—(E. A. Swain.) Female shot near Masham, Yorks., January 10th [It is said to be a hundred years since a bittern was seen there].—(T. H. Calvert.)

HONEY BUZZARD seen several times in early January near Hillington, Norfolk.—(E. A. Swain.)

REDWING found on December 26th, 1906, hanging head downwards dead, having been frozen by the foot to its perch, at Newport, Salop.—(J. H. Vickers.)

BLACKHEADED GULLS.—A flock seen on the fields between Sutton and Epsom, January 5th.—(E. C. Jannar.) At Bushey, Herts.—(P. G. N.)

HOODED CROWS in unusual numbers near Leicester, January 12th.—(A. K.)

YELLOW WAGTAIL at Duns, N.B., January 13th.—(M. W. M. Falconer.) (See also "London Notes.")

SPARROWHAWK seen chasing sparrows over the city of Liverpool, January 13th.—(J. O. Caldwell.)

CORMORANT seen near Falklaw, Fife, during snow.—(R. R. Overstone.)

London Notes.

REED BUNTINGS, a pair seen on Golder's Hill, Hampstead, January 7th.—(G. Davis.) YELLOW WAGTAIL near Hampstead Heath, January 13th.—(L. C. W. Bonacina.) Six or eight at Putney, January 6th-11th.—(W. A. Todd.) REDGOLLS, flocks seen at Hampstead, January 11th.—(G. Davis.) SKYLARK seen during the snow in Putney close to the bridge.—(W. A. Todd.) PEEWITS, vast flock going S. over London Bridge, January 11th.—(C. Hawkins.) DUNLIN seen at Putney, January 6th.—(W. A. Todd.) BLACKBIRD, with left wing totally white, at Teddington, January 11th.—(Blythe Wakelam.) BLACKHEADED GULLS.—One with only one leg has returned to Chelsea Bridge two years running; and this year two others with no legs at all have been there. "These two have been carefully examined by attracting them close by flinging pieces of bread straight up into the air, and it is certain that they have no legs."—(N. E. N.) Several on the Round Pond already had their "black" hoods, January 7th.—(W. P. K. Neale.)

Early Nests.

SPARROWS building, January 9th, at Ealing.—(W. E. Farr.) BLACKBIRD'S nest with three eggs, January 3rd, near Rugby.—(E. H. Venn.)

Birds on Migration.

Flocks of PLOVERS, THRUSH BIRDS, STARLINGS, etc., passing over Bournemouth on December 27th and 28th, from E. to W., with the wind N.W. On December 29th, with wind S.W., no migrants were seen.—(M. E. de B. Rix.) SWANS flying S. to W., January 4th, near Brompton, Yorks.—(Digby Legard.)

Marked Birds.

SPARROW, perfectly black, St. Neots, Hunts., January 14th.—(C. G. Endersby.) BLACKBIRD with white head and mottled back seen at Darvel, Scotland, in three successive winters. [Does any reader know where this bird nests?]—(Nicol Hopkins.) One with white head, two with white collars, two white underneath entirely, one with white tail, and one with white face, all seen at Totnes, Devon, December 22nd-January 14th.—(W. J. W.) HEDGE-SPARROW, cinnamon-coloured, seen at Darvel, Scotland.—(Nicol Hopkins.)

General Notes, January 1-15th.

A number of readers record the following:—THRUSHES singing and repeating phrases; DUNLINS on many inland ponds and streams; MISSEL THRUSHES, LARKS, BLUE TIT, GREAT TIT, singing; WOODPIGEONS cooing; MOTTED UMBER MOTHS, WHITE, SMALL TORTOISESHELL, and RED ADMIRAL BUTTERFLIES abroad; LADYBIRDS, DOR BEETLES, WASPS seen; PRIMROSES, BUTTERBUR, WOOD VIOLETS in bloom. (Most of these records come for the South of England.) MAGPIE CATERPILLAR abroad, January 8th, St. Leonards-on-Sea.—(Gladys Sanger-Davies.) PALE BRINDLED BEAUTY taken, January 9th, at Dover.—(M. S. Richards.) LESSER CRABLINE in bloom, January 14th, near Penzance.—(M. G. B.) SLOWWORM abroad, January 8th, at Totnes, Devon.—(W. J. W.)

B.E.N.A.

(British Empire Naturalists' Association.)

Schools' Mutual Aid.—"B.E.N.A. 457" writes:—"Your scheme for the Schools' Mutual Aid is magnificent, and I wish most heartily I knew how to help. The only thing I can do is to ask you to be kind enough to accept the enclosed 10s. for the scheme, and this I promise to renew every year about Christmas-time." This kindly contribution has been forwarded to the Hon. Cordelia Leigh, 32, Chester Street, Grosvenor Place, S.W., who is hon. secretary of the Schools' Mutual Aid scheme.

The following interesting account of the first experimental working of this scheme comes from Mr. C. J. Chase, Headmaster of the Gloucester Road School, Peckham, which is linked with Stoneleigh School in Warwickshire. Mr. Chase writes:—

"On December 12th our first parcel arrived, containing several smaller parcels which enclosed (a) oak galls, (b) oak apples, (c) galls or excrescences from an ash tree, (d) specimens of bark under which the grubs of the stag beetle had been burrowing, and several of the grubs, (e) a bedeguar from the wild rose. These illustrate a lesson on grubs and their action on plants. Besides which, a good lesson can be given on the stag beetle (we have some specimens). On their arrival I notified the masters, and Mr. Gawler (one of my assistants who is keen on nature subjects) jotted down a few notes on the stag beetle. During the next day three classes—each numbering close on sixty boys—received a lesson of thirty to forty minutes on the galls and grubs. This week the specimens have been shown to the remainder of the boys, all the girls, and most of the infants; and though no set lessons have been given, a chat has taken place, and at least 1,400 young people have seen and handled the galls, etc. The specimens will keep, and have been placed in the school museum for further use when occasion and opportunity arises. Mr. Wells, the master of Stoneleigh School, and I have communicated with each other, and arrived at an understanding. He will send me (a) the specimens he has been using in the school during the week, or (b) specimens as per a list I submitted to him. It was a coincidence that galls should be sent off on the same day that THE COUNTRY-SIDE was issued in which you dealt with the subject. Mr. Wells will acquaint me a few days ahead as to the nature specimens to be sent off. Now for my return. This week I sent him by rail about ½ cwt. of magazines (*Strand*, *Royal*, and *Harmsworth*) and weeklies (*Graphic*, *Sketch*, etc.) On future occasions he will receive picture postcards, letters descriptive (a) of this part of London, (b) of children's home-life in London, (c) of how they spend their holidays, (d) walks in London, (e) London traffic, etc.; also specimens of drawings done by the children."

Masters or mistresses of schools in town or country who would like to share the benefits of this scheme should make application now.

The Garden.

A Rare African Plant.

AMONG the many curious forms of plant life in Africa one of the most remarkable is the family of carrion plants, best known in English gardens through the stapelias, which usually have four-angled fleshy stems with flowers formed like a star fish.

They are widely distributed in the southern portion of the African continent. Allied to them is a genus named Hoodia, with ridged and tubercled stems from one to two feet high, and fleshy saucer-shaped flowers six inches across.

We figure one of them here, *H. currori*, which is in flower at Kew, where it has lately been introduced from Angola, where it grows in the mountains, but has never before been seen alive in Europe.

The flower is covered with silky hairs and coloured rosy mauve with a crimson eye. It lasts on the plant for a month at least. Hoodias have been tried before in cultivation, but they have never become established. Like some animals, they do not thrive under artificial conditions.

Vegetables.

WHAT TO GROW.

VEGETABLES are grown for household uses, and saving in any department is always welcomed. How few know that some varieties of vegetables are totally useless for the ordinary kitchen garden.

You know the man who always has plenty of vegetables in his own garden, how you envy him. How many times do you say, "It is very nice for him, he knows just what to grow?" Now if you wish to have a show equal, if not better, than this man, carefully grow the following varieties, taking as much pride in your kitchen garden as you do in the rose garden or shrubbery:—

Peas.
Earlies: Gradus, Earliest of all, American wonder, and William Hurst, Main Crop, Autocrat, Exonian, and champion of England. Late varieties: Ne plus ultra, Duke of Albany, and Veitch's perfection.

Beans.
Broad: Bunyard's exhibition long pod, Seville long pod, and green Windsor. Runner: Champion scarlet and tender and true. Kidney or French: Canadian wonder and Everbearing.

Beet.
Brydon's exhibition, Covent Garden red, and Pragnell's exhibition.

Brocoll.
For autumn and winter use: Snow's winter white and Veitch's self-protecting. For spring use: Leamington, Cooling's matchless, and Knight's protecting.

Brussel Sprouts.
Aigburth, Dalkeith, and Scrymger's giant.

Cabbage.
Battersea, drumhead, Wheeler's imperial, and Enfield Market.

Carrots.
Champion scarlet horn, early Nantes,

James's scarlet intermediate, and Altringham improved.

Cauliflower.
Snowball, Walcheren, and Veitch's autumn giant.

Celery.
White varieties: Brydon's prize white, Hayward's white queen, and Coles' crystal. Red varieties: Standard bearer, Wright's grove red, and Brydon's prize red.

Cucumber.
Bedfordshire prize, Stockwood, and Wood's ridge.

Endive.
Digswell prize and green Batavian.

Leek.
Dobbie's champion and Renton's monarch.



Photo.)

Hoodia Currori.

An interesting Carrion Plant

(Copyright.)

Lettuce.
Cabbage varieties: All the year round, Wheeler's tom thumb, and Neapolitan. Cos varieties: Paris white, Alexandra, and Kingsholm.

Onions.
Ailsa Craig, James' long keeping, and magnum bonum.

Parsley.
Bedfordshire curled and extra fine curled.

Parsnip.
Hollow crowned and Tender and true.

Radish.
French breakfast, scarlet short-top turnip, white short-top turnip, and scarlet turnip white tipped.

Savoy.
Ormskirk late green and drumhead.

Tomato.
Holmes' supreme and challenger.

Turnip.
Six weeks stone, early, white Dutch, and Milan early white.

Vegetable Marrow.
Chusan, custard, and Pen-y-Byd.

S. J. C.

Plants for the Shade.

INSTEAD of the shady places of the garden being given over to ivy and periwinkle, as too often is advised, these shady spots should be made beauty spots with beautiful and characteristic plants.

Such a plant as the heracleum or giant parsnip is scarcely suitable for the prominent and important positions in the gardens. But have we a bit of garden woodland; then here the plant has its own grand beauty. We need not be afraid of overhanging shade, the heracleum will flourish and flower in spite of it.

I have experimented with this plant in all sorts of positions and can thoroughly recommend it either for single specimens or for groups in the garden woodland.

It has a finer effect here than anything else I can recall, for it has a tropical luxuriance of growth. It is especially handsome just before the great flowering stem begins to leave the lower foliage behind, and I have it in my mind to cut out this stem from some plants this spring and see if it does not mean a longer period of beauty for those gigantic lower leaves.

If this were done with some of the plants in a group and others left to flower in the usual way the handsome effect would, I think, be enhanced.

Where a bit of bold unusual planting is desirable, say, for instance, the north side of some hedge, a long line of this heracleum would make a grand show with its decorative foliage. *H. gigantum*, *H. mattegazzianum*, and *H. lanatum*, together with *H. Panaces*, are all to be recommended, and when well grown attain something like ten feet in height. The plants may easily be grown from seed, and are quite hardy and perennial in habit.

For semi-shade or for sunless borders not absolutely overhung the tall perennial aconites are invaluable. A north-east or north-western aspect suits them admirably, and a somewhat retentive soil.

In fact, I find that the majority of our autumn flowering plants are more successful in rather heavy soil, as plants that are still approaching their flowering period during summer droughts are the subjects that, as a rule, suffer most, and if they can enjoy a cool moist position their flowers are finer and of much longer duration.

I give this hint with reservation, however; it does not apply to plants that come to us from very hot climates, such as natives of South America—the gyneriums (Pampas grass) and others. A good deal of attention has been given to these aconites of late, and among the newer varieties *Aconitum wilsoni* must be reckoned with as a grand stand-by among the last flowers of the year in the hardy flower garden. The individual flowers are large and a good pale blue in colour.

It commences to bloom in early autumn, but I saw it still making a good show in December. Even our indigenous *A. napellus* is by no means to be despised. Once planted it should be allowed to grow into fine stools bearing a goodly number of flower spikes.

(Continued on the next page.)

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THE GARDEN.

Plants for the Shade.

(Continued from p. 153.)

The variety A. N. bicolour is especially effective as the mixture of white with the blue has the same bright cheery decorativeness as it has in the delphiniums. Among the finest varieties *A. fischeri acutum* must be mentioned. It is one of the best blue perennials we can introduce for autumn display, and it attains sufficient height to take its place with the taller perennial asters and chrysanthemums, and if we want a charming sulphur yellow variety we have it in *Apyrenicum*.

F. M. W.

Feeding Roses.

It is quite true that the rose is a greedy feeder and the best blooms in the largest quantity are obtained from bushes which are liberally manured. But you should avoid the very common mistake of trying to encourage the weakest plants by the most liberal treatment.

The opposite principle is the right one. A rose tree in vigorous growth can assimilate and profit by a liberal allowance of food; but one with few and small shoots has very poor digestive powers and you only make it ill by trying to cram it with rich food.

Cut Flowers.

PEOPLE in towns, unfortunately, not being able to have gardens, have to put up with cut flowers.

These are generally expensive, and can be made to last longer if certain attention is given to the preparation and subsequent treatment in water. First, strip the leaves some three or four inches up the stem, and then scrape the outside green bark off the part stripped.

Then with a sharp knife split the stem up two or three inches; this allows the water to go more easily to the flower.

Roses, lilac, and all hard-wood flowers must then be put in water as hot as the finger will easily bear.

Place the vase or glass containing the flowers in a dark place for an hour or two.

Every morning, or night and morning renew the hot water. A pinch of salt in the water will prevent the roses opening too much.

Soft-stemmed flowers should have the ends of the stalks cut, and be placed in tepid water.

C. B. BROWN.

Echium Callithyrsum.

Echium callithyrsum is a shrubby Viper's Bugloss which grows wild in the Canary Islands, and is now cultivated in gardens here and there. It is grown in the large temperate house at Kew, where it attains the dimensions of a 6ft. shrub, with large erect racemes of blue-purple flowers. In the gardens of Southern Europe it flourishes in the open air, and we have seen it in South Cornwall. There is a plant in the garden of Mr. Dorien Smith at Tresco, Scilly Islands, where it is quite happy among the listuses, aloes, cordylines, and other sun-loving plants that find a congenial home there.



WHAT ABOUT SWEET PEAS? ASK "ECKFORD."

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The Country-Side

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No. 90. VOL. 4.

FEBRUARY 2, 1907.

1d. WEEKLY.

Can Animals Think ?

THE INTERESTING PROBLEM OF "PRINCESS TRIxie."

As a member of the Committee appointed to decide upon the character of the performance of the "thinking horse" at the Palace Theatre in London, I deeply regret the beautiful animal's serious illness which—at the time of writing—makes it doubtful when the Committee will assemble.

In fulfilment, however, of my promise to readers of THE COUNTRY-SIDE, I now give my views of this famous mare's ability.

As a performance there is nothing very unusual or remarkable in it. During the last forty years I have seen pigs, horses, donkeys, and dogs perform very similar feats, in seeming to spell out words and so on.

In this, "Princess Trixie's" clever show at the Palace presents a parallel to the "turn" of the Zancigs at the Alhambra, concerning which many newspapers have been publishing columns upon columns of contradictory views. Feats very similar to those of the Zancigs have amused and mystified London and the provinces many times during the last half century, and, but for our irrepressible hankering after the marvellous it might seem strange that at this late hour London should excite itself about the possibility of the supernatural suddenly turning up in a music hall performance.

But this it was which, doubtless, gave the zest to the feats of the Zancigs; and it is probable that "Princess Trixie's" cleverness would have attracted little attention, but for the claim put forward on her behalf, that in "thinking" she exhibits "the intelligence of a child of six." The intelligence of a child of six is not great, but in its way it is human; and the claim put forward on behalf of "Princess Trixie" amounted in effect to a claim that the intelligence of animals differs not in kind but only in degree from that of man.

This question is at present the battleground of science and religion; and the claim that it was decisively settled by the music-hall "turn" of a performing mare is sufficient explanation, I think, of "Princess Trixie's" sudden fame.

Now, has this much-talked-of mare the intelligence of a child of six?

A child of six can, no doubt, be taught to distinguish colours, to spell easy words, to recognise figures, and to do very simple sums in addition and subtraction.

These are the feats which "Princess Trixie" is supposed to perform amid the nightly plaudits of the Palace audience.

But the real point to be borne in mind is that in doing its simple sums the child of six really recognises the letters and figures employed as symbols. Does the mare similarly recognise them, or does she merely know them as marks of certain kinds which she has been taught to distinguish?

To discover the answer to this question, I visited the Palace Theatre and watched the mare's performance carefully. Several points were noticeable, as follows:

1. There was very small variety in the figures used.
2. The sums in money were restricted to questions as to the change for ten shillings.
3. The words spelt were of the simplest order, such as "dog," "bird," and

"cow."

4. The colours selected were of the commonest kind, "red," "blue," and "pink."



Photo.] "Princess Trixie" and her Trainer. [Hana.]

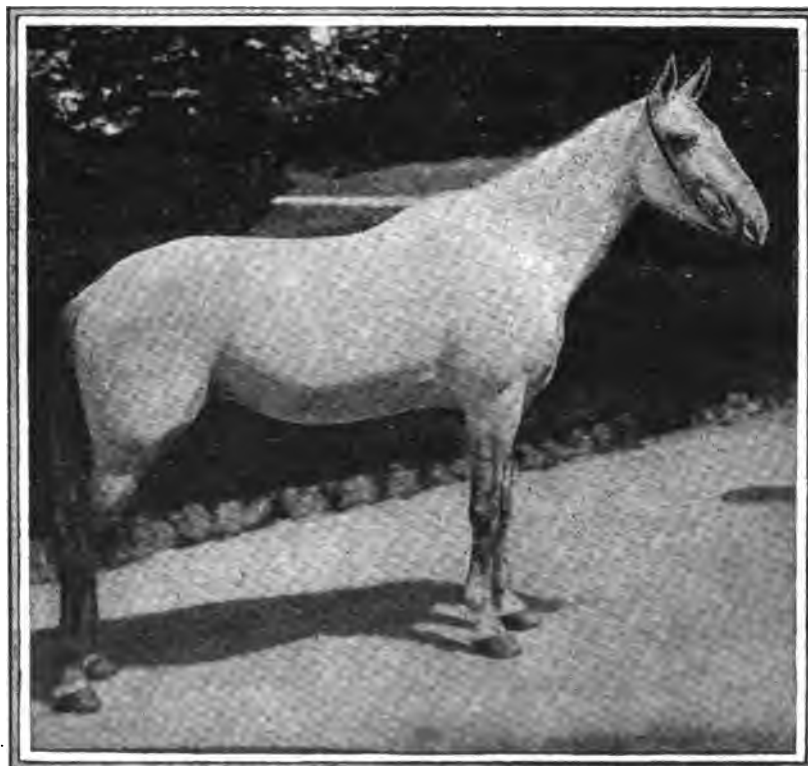


Photo.]

"Princess Trixie," the Horse that is attracting so much attention.

It may have been an accident, of course—and it is, perhaps, not vital to the question—that the feats were so simple on that occasion; but the fact struck me as remarkable, that when the whole audience was invited to propose tests, nothing more difficult should have resulted.

Other points were:—

5. The way in which the letters or figures for each test were supplied in driblets by the mare's trainer, rendering it quite possible for him to handle them in the order in which they were to be selected and to place them (although seemingly tossed without care) in the proper parts of the curious basket-table from which Princess Trixie afterwards selected them.

(Continued on p. 160.)

[Hana.]

Country-Side Notes.

Warham, Norfolk.

The theories and hypotheses that float about the atmosphere of human intellectual life—the wise man gives a courteous ear to all, and leaves it to fools to reject and condemn before they have listened.

—LEO H. GRINDON.

I HAVE not space to acknowledge all the congratulations which have come regarding the permanent enlargement of THE COUNTRY-SIDE, but they are very welcome as showing the personal interest which readers take in the fortunes of "our little paper," as many of them call it. Perhaps it will not always be a "little paper," but "*Festina lente*,"—"Hasten slowly"—is the wisest of all maxims in such enterprise, and so, soon, however, as this first step is found to have been justified, others will follow; and if our readers want a still larger COUNTRY-SIDE they will hasten the extension by helping to ensure its circulation among their acquaintances.

I have received many answers to the question "How to mark wild birds"; but none of them get beyond the difficulty that in order to identify a marked bird you must have it in your hand: and this, in the case of a wild bird, can only be managed as a rule by killing it. We do not want to mark birds reared in our neighbourhoods in such a way as to encourage every one who may see them later on to kill them for the purpose of ascertaining what marks they carry. Instead, we want some system of marks which will catch the eye when the birds are at liberty, telling us from what part of the world they have come.

Now the amount of information which can be conveyed by a system of marks depends upon the number of variations which can be used. It seems to be generally and, no doubt, rightly assumed that the only practical way of permanently marking birds would be by means of light metal rings on the legs; and the number of variations which could be employed seems to be limited by (1) the number of rings on a bird; (2) the width of the ring, and (3) its colour. First, as to the legs, the rings might be placed either on the right leg, the left leg, or both legs; and these variations might be held to indicate that the bird was marked when in the nest in the northern, central, or southern parts of the northern hemisphere. Thus all birds reared in the British Isles would wear their rings on the right leg; those reared in Central Europe would be ringed on the left leg; and those in the Mediterranean region and Northern Africa on both legs.

Next, to distinguish British birds from those of other countries in Northern Europe, we might adopt special colours. All birds ringed between those lines of longitude which include the British Isles might be coloured blue; red for those lines which include Scandinavia; green for those which include Northern Russia in Europe; yellow for Northern Siberia,

etc., and so on round the world. Thus, in winter we might expect to see in Britain birds with red rings on the right leg showing that they had come from Scandinavia, as well as some with green rings or yellow rings on the same leg, showing that they had come from Northern Russia and Siberia respectively. In summer on the other hand, we would look for birds with blue, red, or yellow rings on the left leg or on both legs showing what parts of Central Europe or North Africa they had come from. The appearance of a bird with a ring of any unusual colour would always be a matter of great interest.

And we have not yet exhausted the possibilities of the scheme. A blue ring on the right leg would indicate that the bird was reared in the northern part of Western Europe—the region including the British Isles; but it might be further arranged that a narrow ring should indicate the southern and a broad ring the northern half of that region. Thus a bird reared in Britain would have a broad blue ring, and a bird reared in France a narrow blue ring—the words "broad" and "narrow" being understood in proportion to the length of the bird's leg.

Lastly each region could be further subdivided according to the shade of the colour employed. Thus, premising that the general rule were adopted that the colour should grow darker towards the south; a pale "Cambridge" blue might indicate the Highlands of Scotland and the islands in the northern seas; a bright blue the Lowlands of Scotland and Northern England; and a dark blue Southern England, Ireland and Wales. Thus in whatever part of Europe or Africa a bird chanced to be seen, during the winter, the observer would be able to tell, by its wearing a broad, blue ring of a certain shade on the right leg in what part of the British Isles it was reared. In the same way we, in summer, should be able to tell by the width, colour, and shade of the rings which our summer birds might wear on their left legs or on both legs, where they were caught and ringed in winter to within a hundred miles or so. Thus, presuming that a flycatcher left the South of England with a broad dark blue band on its right leg, and came back with two narrow light red bands in addition on its leg, we should know that some observer in the North of Africa had sent us a message to say where our bird had spent the winter.

In addition it would not be difficult, provided that some central authority took charge of the operations, to devise a simple system of marks on the rings, whereby every ringed bird, caught, killed or picked up dead, could be identified as having been marked by a certain person at a certain place in a certain year. Even without these details, however, it would greatly add to our interest in bird life to know from what region our visitors come.

In a country walk in winter in the South of England we might see the broad, dark blue ring of the resident bird, the bright blue ring of the bird from the north, the pale blue ring of the bird from further north, rings of three shades of red on birds from corresponding sections of Scandinavia, and of green or yellow upon birds from North-Eastern Europe and Siberia. Occasionally the appearance of purple, orange, etc., rings would tell us of the arrival of an interesting stranger from some unusual quarter.

There would, of course, be many impediments and difficulties in the way of carrying out this scheme. In the case of small birds, for instance, the rings would need to be extremely light and in the case of large birds with strong bills, proportionately strong. On the swallows, again, the rings would never be seen until the birds were dead in the hand. Nevertheless I think that the scheme is one which might be carried out by international agreement of scientific bodies and would certainly add much to our sum of general knowledge about the movements of birds. At the same time, I am not myself of opinion that this knowledge is very greatly needed. Firmly holding the belief that the movements of birds on their southward migration in autumn are governed by the winds and on their return in spring partly by the winds and partly by their recognition of landmarks, I think that the sum total of the knowledge to be derived from marking birds would be that the winds differ a good deal in different years.

Readers have written to suggest that the December cuckoo, supposed to have been heard by several persons at Handcross in Sussex, on December 13th, at 7.15 a.m., must have been a ringdove. It is suggested that the coo of the ringdove may easily be mistaken for the note of the cuckoo. I doubt if this is so in the case of observers who say that they heard the cuckoo "distinctly give fourteen or fifteen notes." Indistinctly hearing the ringdove once or twice, you might make the mistake, if you were not paying particular attention to the sound; but in counting the notes up to fourteen or fifteen it would be different. A much more reasonable explanation suggested by one correspondent is that, unknown to the listeners, there was a cuckoo clock in some neighbouring cottage behind an open window; because the time was given as 7.15, and, if the clock was a little slow, it would have given exactly fourteen notes then, I think we may accept this as a very probable explanation; although, in face of the undoubted fact that swallows and sandmartins have been seen at Havant during December and the first half of January, there can be no reason why the cuckoo should not have been heard on one occasion in the same county on December 13th, because the same south winds which brought the swallows might certainly have brought a cuckoo.

In view of the habit of fieldfares to roost on the ground, it is curious that during this winter several readers have reported the assembling of large numbers of them to roost in woods. Has this been at all general, or were the birds in the cases reported merely assembling in trees which commanded a view of the rough ground where they really intended to roost? I have often known small parties of fieldfares to do this, for the same reason of precaution, no doubt, which leads rooks to assemble on the ground in fields near the wood where they propose to roost—in order to watch the place well before committing themselves to it for the night. On the other hand, perhaps snowy weather drives fieldfares into cover to roost.

* * *

An echo of the "toad-buried-in-solif-rock" controversy is raised by a cutting which has been sent to me from the *Liverpool Weekly Post*. I will give it in full, headlines and all:—

AFTER THOUSANDS OF YEARS.

INTERESTING DISCOVERY IN A MINE.

Our illustration is from an actual photograph of the fossilised body of a frog just discovered in the centre of the Hem Heath Coal Mine, Chesterton, North Staffordshire, at a depth of 825 feet. It was embedded in the earth, and must of course have reposed there for thousands of years during the formation of the coal and other strata. The little creature is well-nigh perfect. It has a remarkable length of leg compared with the size of the body, each limb measuring over four inches. As far as one can judge, there are points of difference as contrasted with the frog as we know it to-day, the pointing of the toes—very much like a human hand—being curious. The frog was taken out of its bed by a miner. It must have found its grave during the tertiary period of the earth's history, and when it is considered that since that period two-thirds of Europe has been lifted out of the sea it is a matter for wonderment that the body of the amphibious animal should have been thus preserved.

* * *

Now a glance at the illustration referred to shows that the so-called fossilised frog is merely one of those mummified relics of modern frogs that one finds in any cellar in the country which has an opening to the ground level. The length of limb, the pointing of the toes, etc., are exactly those of the common frog. It is very evident that the unlucky frog found its way down the mine-shaft; though whether it was fatally injured in the fall or was subsequently trodden upon or otherwise killed will never be known. The contorted position of the mummy, however, shows that it did not die, as imprisoned frogs usually die, of gradual inanition.

* * *

A reader narrates an instance of the cleverness of mice, which admirably illustrates the origin and meaning of the intelligence which wild animals are able to display. A trap was set outside a mouse-hole one morning and during the day seven young mice were caught in succession. Next morning it was found that another young mouse had been caught during the night, but the old mice had blocked the entrance of the hole with stones and, although these were removed, no mouse was caught there again.

Now, if a succession of fatalities occurring at one exit from the home of the mice had been a novel experience in the history of their race, to block up and abandon the use of that exit (thus escaping all further risk from the trap) would have shown intelligence of a high order. But we must remember that a beast of prey which had once caught a mouse at one entrance of its burrow would certainly wait there or return there again and again, ultimately exterminating the whole family, unless they abandoned the use of that opening. As, moreover, the same process would be applied at one time or another to all families of mice, these little creatures would become extinct. Therefore, the fact that they are far from extinct shows that they have learned to abandon those exits which experience has shown to be dangerous.

* * *

In a wild state it is probably the scent of the beast of prey mingled often with the scent of the blood of a relative which conveys the warning to them; while in human dwellings a trap tainted with the smell of human fingers and containing a dead member of the family would equally arouse the instinct of self-preservation. To them the trap, whether set or unset, would represent a grim peril at the door; and they would promptly close the entrance. Out of doors this would be simply effected by shovelling earth from inside to the mouth of the hole; but the mice in question, burrowing under the cellar stairs, evidently found loose stones more easily available than earth. Thus viewed, the conduct of the mice exhibits only the natural instinct acquired by the race—and other races of burrowing animals which are preyed upon—in the struggle for existence against their natural enemies; although, when viewed as an isolated action it may seem to indicate an unusual degree of intelligence.

* * *

In conjunction with the use of such Latin names as "Perdix perdix" for the common partridge I have received a very able letter from Mr. W. F. H. Rosenberg, F.Z.S., which is unfortunately based upon a misreading of my remarks regarding the rule of priority in scientific names. He states the whole gist of the matter, however, in the sentence: "The International Congress of Zoology, in the rules of nomenclature which have been drawn up to avoid the confusion previously existing, distinctly lays down (Art. 32): 'A generic or specific name, once published, cannot be rejected in future by reason of its unsuitability, even by its author.'"

* * *

Obedience to this drastic rule necessitates the use of such names as "Perdix perdix," because "perdix" was the bird's first specific name, and "Perdix" was the name first given to the genus in which it is now placed. As, moreover, our National Museum obeys the ruling, I have obeyed it too, explaining in response to protests from readers that, however absurd such names may seem, I think we all ought to follow the lead of the National authorities.

* * *

At the same time this does not affect the fact that the International Congress of Zoology made a serious mistake in Article

32. The strength of the objection to using identical generic and specific names for the same thing should have been foreseen; and an exception should have been made to the rule to meet the case. Had this been arranged, everyone would be able and glad to call the common partridge "Perdix cinerea." Instead of that, the working of the rule of the International Congress seems almost to have exaggerated rather than avoided confusion, because so many naturalist writers have refused to adopt it. It may not be too late for the error to be corrected; but meanwhile THE COUNTRY-SIDE will continue to call the common partridge "Perdix perdix" and the pewit "Vanellus vanellus," and so on, in deference to authority. Still, at the same time, I feel no obligation to refrain from characterising such titles as absurd in appearance.

* * *

To get rid of the absurdity, a reader makes what at first sight seems an excellent suggestion, namely, that instead of repeating the generic name, the epithet "typicus"—or "typica" or "typicum," as the case might be—should be used. Thus, instead of "Perdix perdix," we should have "Perdix typica," showing that the common partridge is the typical species of the genus *Perdix*. This would be a very useful system, and might easily be adopted as a compromise by "the authorities," were it not open to one objection in practice. For various reasons it is often necessary to index natural objects by their specific as well as their generic names. Collectors of butterflies and moths, indeed, use the former almost exclusively; and the present confusion regarding the generic names of birds will inevitably incline ornithologists in the same direction, where the presence of species named "typicus" in each of a large number of different genera would make the confusion worse confounded. On the other hand, botanists do not complain of the frequent repetitions of such specific names as "vulgaris," "officinalis," etc.; so perhaps the adoption of the name "typicus" might be the way out of the difficulty.

E. Kay Robinson.

Grey Skies.

Grey skies and misty heavens sad with rain,
Gaunt sombre trees, with spectral branches bare
Outstretched into the moisture-laden air,
That sweeps the wintry plain.
Far-reaching fields, across whose furrowed
crests
Float fleecy vapours, as a winding sheet
Wrapping the green blades of th' up-
springing wheat,
From Nature's fertile breasts.
Here, where the streamlet in the summer days,
Toiled on its sluggish course, a silver
thread;
A swirling torrent races o'er its bed,
In devious waterways.
Cold biting winds whisper with eager breath,
Raising the russet leaves that lie around,
Into fantastic eddies o'er the ground;
To join the dance of death.
Grey skies packed high against the fading
light,
Uncertain shadows gathering far and
wide
Fall thick and fast, folding the country-
side
In darkness infinite.

ROBERT BARKER.

Queries, Answers, and Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

"Paralysed Rooks."—With regard to your paragraph, re "Paralysed Rook," in THE COUNTRY-SIDE, for January 12th, may it not be due to the birds having eaten wheat which has been steeped in a weak solution of strychnine?—JEFFERY SMITH, Jesus College, Cambridge.

Blue-faced Mandrills.—Besides the recent addition of a blue-faced mandrill to the Zoo, mentioned by Mr. Finn, there is another specimen to be seen at North London, namely, at Bostock and Wombwell's Menagerie at the Agricultural Hall in connection with the World's Fair. I saw the animal at the Zoo recently, and although no doubt it is a good specimen, it appeared to be thinner and not so brightly coloured as the one at Islington.—ROBERT W. PETHEN.

"Birds Feeding on Flowers."—About four or five years ago there was a blackbird in the open air aviary at Pearson's Park, Hull, who would come readily and eat daisies from one's hand. Whenever my sister visited the park a pocketful of daisies were always plucked to feed this bird. I also recollect about twelve months ago seeing a robin pulling half burnt tobacco from the bowl of a broken clay pipe and eating it with evident relish. This happened at Hele, near Torquay.—F. PRICE, Torquay.

Robin on a Rifle.—Just at the moment a company of members of the Hull Rifle Club were about to fire at the target at the Brough Rifle Range on December 15th a robin flew to and fro across the rifles, finally alighting on one of them. It appeared quite tame, sat for a moment, and then repeated the action. The weather was cold. Curiously enough a member of the Rifle Club was trout fishing some time ago when a swallow alighted on the end of his rod. Has anyone had such an experience?—MATTHEW HALL.

"Sport."—A rabbit coursing arranged for Boxing Day at Long Sutton, five miles from here, duly came off. Despite the snow which covered the ground to an average of twelve inches deep, the committee decided not to shatter the hopes of the expectant fanciers. You may guess what followed. The defenceless little rabbit, whose home is perhaps several miles away, is shown to the velping dogs and then hurried about fifty paces down the field. A moment later the dogs slipped, while the frightened rabbit crouches in the snow. The "starters," clapping their hands and shouting wildly, fail to arouse the stupefied animal. A moment later it receives a kick, and the poor thing hobbles away, sinking at every jump, half buried in the soft snow, until it falls exhausted. Another moment and the tragedy is complete. The dogs come up, a short struggle (on the part of the dogs,

in which their victim is torn to pieces), a fierce yell from the crowd, a declaration of "undecided course," and after a pause the wheels of torture turn again. How long shall such "sport" mock the voice which says, "I am thy maker: the Creator of all things?"—J. J. TOWNS, Holbeach, S. Lincs.

A Modern Cave Dweller.—The age when people dwelt in dens and caves of the earth has not yet passed away even in Great Britain, and we give an illustration showing an old Scotswoman who has lived in a cave along with her husband for the past fourteen years. As will be seen, the cave has been given somewhat the semblance of a human dwelling externally by the addition of a rude door; internally it is not so uninviting as it appears from the outside. This cave-home is situated at Mackray Bay in the Isle of Arran.



Photo.]

A Scottish Cave Dweller.

This old peasant woman has lived with her husband in the cave shown for the past fourteen years.

"Deferred Moths and Butterflies."—Mr. W. Graham's note in the issue of December 29th seems to place this interesting phenomenon in a new light and also to open up an inquiry of great importance. The idea of some insects "lying over" lest some accident should befall a later brood has similarly been forced upon me, not however as regards the pupal stage but in the case of the perfect insect. On July 23rd, 1901, three small tortoiseshell butterflies commenced hibernation on the ceiling of a staircase in my house. A note, made at the time, says: "Up to this date (July 23rd) the weather had for some little time been exceedingly hot," so that no period of dull or cold weather occasioned the early hibernation of these three insects. On August 1st I took one of them down and found it to be in a perfect state, not at all worn. I then took it to a well-lighted room with window facing west, but it made no effort to escape, merely fluttering to the back of a picture, where it remained. One specimen of a later brood took up its winter quarters

in the house, but not in the same place. The staircase where the first three hibernated was the darkest, and at the time they came in the coolest place in the house. In the September and November issues of the *Entomologist* for that year there appeared notes from F. M. B. Carr and the Rev. C. A. Sladen respectively recording similar instances of the hibernation of *V. polychloros* at Lee July 27th, and *V. urtica* at Chester July 22nd. The observations of the Rev. C. A. Sladen differed from my own in as much as the specimen noticed by him hibernated in a room always warm. It may be, however, the room was dark. Now these observations on butterflies in the perfect state seem analogous with those on moths in the pupal stage, and in each case there would seem to be analogous reasons for the behaviour of these insects. Mr. Graham points out that the species most liable

to lie over are those which appear under unfavourable conditions of weather and those whose larvæ feed late in the autumn when there is danger of the food supply being cut off. In the case of the *Fanessa* family of butterflies there is a possibility that the autumn brood may not reach maturity (only last autumn I found several chrysalids of *V. urtica* which I believed had been killed by early frosts) and hence the necessity for a remnant of the first brood to lie over till the following spring. I am not aware that the emergence of those butterflies which hibernate in chrysalis form, e.g., the whites, is ever protracted; neither does there seem to be any reason for it. But there does seem good reason why the insects mentioned should so act. It seems to be a subject worthy of the closest attention.—T. J. BRESTON, Cookley, near Kidderminster.

Deferred Moths.—Has your correspondent, Mr. Graham, tried the effect of sunshine on the pupæ of the small eggar moth? I have reared a good many of them, and have always found that when placed in the sunshine during February and March they emerge freely, but when kept in the dark they continue in the pupa state for two, or three, or even four years without apparent change. This may possibly answer some of the questions which your correspondent propounds.—(Rev.) C. F. THORNEWILL, Whitchurch, Salop.

Blue Tit with Two Claws Only.—A blue tit shot here on January 5th last had had six toes cut off some considerable time previously as the slight remaining stumps were quite polished by friction. The fact that it had only the hind-claw left on each foot was not noticeable from its movements; but I cannot understand how it managed to swing upside down and in all sorts of different positions with the aid of only these two claws.—SYDNEY H. SMITH, Park Crescent, York.

[J. Oliver.

A Sparrow's Remarkable Beak.—For some weeks I had noticed flying about my garden a bird with an extraordinarily long beak, until one day I saw it in the possession of a cat and found on rescuing it (I am sorry to



Photo.] [C. E. Salt.

An Overgrown Beak.

A hen sparrow which, when caught by a cat, was healthy and fat, in spite of the fact that the lower half of its beak was an inch longer than the upper.

say it died soon after) that although the upper division of the beak was quite natural, the lower part had grown and extended one inch beyond the upper. This extended part was filled with hardened dirt and the extremity was blunted. The bird was strong and well nourished, but how it has fed is difficult to see. After photographing it I took it to a taxidermist who said that it was a hen sparrow with a deformed beak. It was very dark, the head being black.—C. E. SALT, Handsworth. [Such malformations are caused by an injury to the bill, which prevents the two mandibles grinding properly against each other, with the result that the growth of one of them is unchecked.—ED.]

"System of Marking Birds Wanted."—I suggest that a small strip of either aluminium or celluloid with rolled edges and forming bands would be suitable owing to lightness and durability. They would admit of being strained open sufficiently to attach to the bird's leg and then spring back into position, the rolled edges preventing injury to the leg.—C. HAWKINS.

Cannibal Blackbird.—A lady saw, during the late hard weather, a blackbird looking very weak and ill hopping about on the lawn. Presently another blackbird hopped up, and having killed the former, commenced to eat it, till someone in disgust ended his repast with a charge of shot.—A. RITCHIE, Cromer.

"The New Darwinism."—When the Darwinian theory was at the height of its popularity I chanced to look in on Mr. G. R. Waterhouse at the British Museum. He was pre-occupied with certain fossil bones set up in front of his door for removal to the Kensington Museum; but presently he asked me my opinion on the question of the day. Aware of my ignorance, I evaded the question by remarking "I did not quite understand natural selection." "Oh," he answered, "it is adaptation." The reply seemed so satisfactory I never afterwards needed to discuss the subject.—(Rev.) A. H. SWINTON, Totnes, Devon.

"Bees and Colours."—About nine years ago I kept a small apiary in a clay pit here. A gentleman from Cirencester Agricultural College visited the pit to inspect some fossils, and on his return journey took a short cut

past my hives when he was, I regret to say, stung severely. He was wearing a black silk hat and black coat, which together with the fact that I have had many stings when wearing a black felt hat near the hives gives me the impression that bees have a dislike for anything black. Dark blue rough serge and flannel garments seem to greatly irritate bees also.—C. R. BOXALL, Quarry Road, Swindon.

Moorhens Flying High.—Do you know that moorhens sometimes fly very high, making a peculiar short croak? This, I believe, occurs when the young birds of the year are seeking a distant home. At other times they fly or skim low.—S. YEATES, Cowfold, Sussex. [Have other readers observed this? I have known moorhens, which are clumsy fliers, to be carried far and high by the wind; but have never witnessed any voluntary migration.—ED.]

"Hedgehog Milking Cows."—I notice that "C. H. L. Penruddocke" has been assured as to the possibility of a hedgehog milking cows. Now I would like to ask your correspondent to open a hedgehog's mouth and see how far he can insert his little finger without coming in contact with its extraordinarily sharp teeth, which I should think would be a bit too sharp for any cow's tender teat, if it could get it into its mouth at all. And then again, if he will notice how a cow is milked and the amount of pressure that is brought to bear to induce the milk to run, he, I am sure, will see the utter impracticability of the idea. As I don't want to throw any doubt on the veracity of his informant, what really happened may have been this: I have several times noticed when cows have been driven in to be milked, through the udder being overcharged or weakness (I can't say which) a little milk has exuded, as most likely happened in this case, and nothing would be easier for a hedgehog (whose passion for milk is extraordinary) than to follow up the drops on the grass until it came to the source of supply and was seen probably licking the teat, not sucking it.—EDGEWORTH BOILEAU, Lymington.

As to whether hedgehogs milk cows or steal milk, a friend of ours who keeps cows says that he is certain they do, as he has seen them do it. Certainly they are very fond of it, for the one or two I have kept seemed so.—J. W. EAST, Anlaby, Ramsgate.

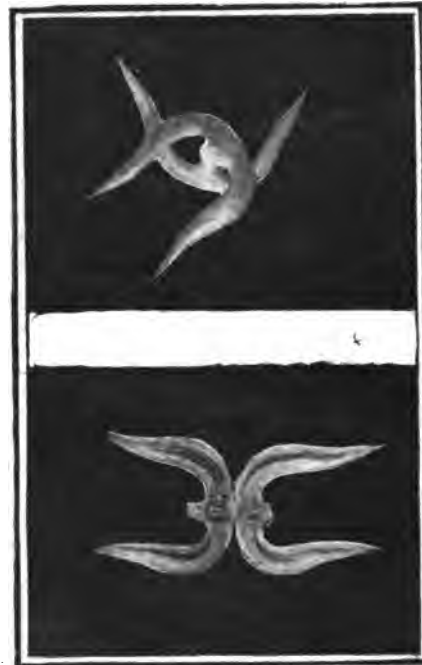
Cats and Glass.—I had two cats, a white one and a tabby. The latter, who was quite under the dominion of the white one, had a perfect passion for feeling glass with her paws, and on one occasion I saw her stand on her hind legs and, with evident enjoyment, drew one paw down the window-pane. The white cat seemed to disapprove of this and twice dragged her away. After the second time, however, the white cat herself stood on her hind legs and passed one paw over the glass as if saying to herself, "What does the child find so delightful in this?" Is it usual for cats to be fond of feeling glass?—A. J. SOMERSET.

South African Butterflies.—In reply to the Rev. C. F. Tomlinson's queries (p. 87) about the painted lady (*Pyraemis cardui*), this butterfly is practically cosmopolitan. It passes the winter as a chrysalis, not, as commonly supposed, as a butterfly. The specimens caught in this country are mostly either immigrants from S. Europe or N. Africa, which come over in early summer, or the progeny of these, which appear in early autumn*. Is Mr. Tomlinson sure that all the varieties he sees are *Colias edusa*? There are so many species of clouded yellow very much alike. The difference in the summer and winter broods of the peacock-like butterfly is common among African and Indian butterflies, the wet and the dry season form being quite different in appearance. One European butterfly (*Vanessa levana*) has summer and spring broods utterly unlike each other.—C. NICHOLSON, Chingford. [*Great multitudes arrived on the East Coast in late September a few years ago.—ED.]

How Butterflies Settle.—When a red admiral settles on the face of a wall it always does so with its head downwards and its expanded wings close to the wall, which probably tends to screen it from the observation of an enemy passing above it.—EDWARD COOK, Walden Lodge, Devizes. [As the head-end of the butterfly projects some distance from the wall may not the advantage be that the wings are sloped so as to receive the sunlight?—ED.]

Habits of "Stick" Caterpillars.—"Stick" caterpillars do not, as suggested on page 76, need the support of a thread when standing out stiff and straight from a branch; moreover, all of them do not spin the silken thread referred to. The true use of this thread is seen if the branch be smartly tapped. The caterpillar immediately lets go and hangs by the thread, which is instantaneously "paid out." When the danger is past it climbs up hand over hand, or rather legs over legs, and fixes itself as before. Anyone who has never watched this climbing process should do so at the very first opportunity as it is most interesting. Some caterpillars are very quick at it; others most deliberate.—C. NICHOLSON, Chingford.

An Insect Plant Alliance.—The bull's-horn thorn is an acacia growing in Nicaragua with strong curved spines set in pairs which are hollow and are tenanted by ants that make a small hole near one end of the thorn when it is soft and full of sweet tissue. The ants also burrow through the partition that separates the two horns, so that the one entrance serves for both. Here they rear their young, and in the wet season every thorn is tenanted, and hundreds of ants are to be seen running about. If a leaf be touched or a branch shaken the little ants (*Pseudomyrma bicolor*, Guép.) swarm out and attack the aggressor. They sting severely and form a most efficient standing army for the plant. For these services the ants are not only securely housed by the plant, but are provided with a bountiful supply of food in the shape of little cups of sweet liquid and small fruit-like bodies which are formed on



From a drawing] [F. H. Brownhill.

Bull's-Horn Thorn.

From an acacia which houses ants in its thorns and is protected by them. The upper figure shows the thorns as they grow: the lower one shows one pair cut open, revealing the tunnel in which the ants live.

the leaves. These facts, which are taken from "The Naturalist in Nicaragua" by T. Belt, show that the ants are really kept by the acacia as a bodyguard.—F. H. BROWN-HILL.

Week's Wild Life in Pictures.

(See page 161.)

THE MARSH TIT (1) is less often seen in gardens than the great tit, blue tit, or cole tit, being essentially a bird of shady woodlands, when its curious "scissor-sharpening" note now begins to be heard. It wears much the same plumage of white and black and brownish grey as the cole tit; but is easily distinguished, because in the cole tit the black of the head comes down behind the eyes but is broken by a conspicuous white patch at the back of the head. The marsh tit, as may be seen in the illustration, wears an even black cap, which often leads to its confusion with the blackcap—a bird which, being a warbler, has a more slender shape and a longer bill than a tit.

2. In the Week's Wild Life of January 12th we gave an illustration of a weasel that had fixed its teeth in the neck of a rabbit just behind one ear; and in this picture we see that the fierce little animal adopts exactly the same tactics in dealing with a partridge. But for the accuracy of its aim at the fatal spot when a bite means paralysis of one side of the body, it would not be possible for so small a beast to overmaster such large quarry; and so long as a rabbit keeps its face toward the weasel, the latter will not attack. By a very stealthy and cunning approach, however, and a sudden dash the weasel achieves its end; but its usual food consists of mice.

3. The Wych elm can usually be distinguished at sight, even when leafless, from the common elm by the more spreading habit of its branches—the trunk, as it were, ending at a certain sight and becoming dissipated among the branches after the manner of an oak, instead of continuing to grow aloft in one or more main stems like the common elm. It is this continued perpendicular growth of the elm, apparently, which recommends it to the rook for nesting purposes, because it provides many upright positions for the nests between the forks of the branches.

4. The small brindled beauty moth is not much of a beauty, being obscurely dark brown in colouring with indications of a central pale band and some dark lines. It gets its name of "beauty," no doubt, by relationship with the oak beauty, a really handsome moth. And, contrary to human custom, the title of "beauty" can only apply, even indirectly, to the male; because the female carries to its limit the principle that in the hungry months of winter and the very early year, it is good for the race that this precious sex should not court observation, for it wears no vestiges of wings, not even the shoulder-knots which modestly decorate the females of most winter moths. The males may be found now sitting upon the trunks of oak trees sometimes; but the easiest way of obtaining the insects of both sexes is to dig round the roots of the trees in autumn. It is fairly common in several London suburbs.

5. The nuthatch has, perhaps, more interesting points than any other

British bird. When it can be tempted to the bird-table it is as amusing as any tit. It has a curious habit of wedging nuts tightly into a crevice of a tree-trunk, so that they are fixed tightly while it hammers a hole in them. When hunting under bark for insects it can prize off pieces as large as itself. Although it has not the woodpecker's advantage of special climbing feet—two toes in front and two behind—and pointed tail feathers to cling to the bark, it seems to run more easily along the underside of a branch, as often as not head downwards. It is daintily clad in quaker grey above with a yellowish-tawny waistcoat; and its pleasant call of "wit, wit, wit," very like a soft human whistle, is now often heard in woodland, grove and park.

6. The common starfish with its five fat "fingers" may be found lying about the beach after any rough tide; and it is really a wonderful creature. Most of its underside is covered with little points of tubes which the creature lengthens by filling them with water and by their aid crawls about, because they have sucking discs at the end, which cling to any solid surface, enabling the creature to pull itself along. The loss of a "finger" or two does not seriously incommode the starfish; for it can always reproduce these, including even the branches of the stomach which extend into them.

7. The ram's horn coil shells are by far the largest of the family found in Britain. They are local, but very common where they occur in Kent or Surrey, inhabiting slow streams, ponds, and ditches. When provoked the creatures often discharge a copious stream of red fluid, doubtless colouring the water in order to hide themselves from the enemy. It is probably only a coincidence that the ram's horn coil shell gets its name from its resemblance to a curled ram's horn while its latter name is "corneous" meaning "of horn"; because the latter name appears to be derived from its yellowish horn-colour and glossy surface. This surface appears only in the adult shell, however. Young specimens have the shell covered with a mossy film of outer skin.

Can Animals Think?

(Continued from page 155.)

6. The unnecessary amount of talk with which the performance was accompanied, rendering it quite possible for the mare's trainer to be giving her instructions every time.

7. The frequent movements of the whip in the trainer's hand and his other gestures; each of which might have had its meaning for the animal.

8. The fact (as it appeared to me) that the movements of the mare's head when she was supposed to have finished a calculation were always in response to a certain tone in the trainer's voice.

A little consideration of these points will suffice to show how complete an understanding, not necessarily on the plane of human intelligence, may have been established between "Princess" Trixie and her exhibitor.

Yet other points which I noticed are these:

9. That when asked to count the number of girls and boys in a box over the stage, the mare did not look at them before selecting the right numbers.

10. That when asked to count the numbers of ladies and of gentlemen in the front row of the stalls, she did not look at them before selecting the right numbers (4 and 14 respectively).

When I say that the mare did not look at people whom she "counted," I am guided by the fact that a horse cannot pay inquisitive attention to any object without pricking its ears forward, and that it cannot focus one object after another without an obvious movement of its head from one to the other. Instead of this, "Princess Trixie" almost always stood with her ears and eyes turned back, manifestly (as it appeared to me) concentrating her attention upon her trainer's voice or actions.

The importance of the evidence which "Princess Trixie" thus gives against the claims put forward concerning her cannot be overestimated. We must remember that the horse is an animal which has always mainly relied in the past upon its keen senses of smell and hearing. Consequently, whenever any object attracts a horse's attention the animal, at once and involuntarily, faces it with ears forward and nostrils open, ready to catch some inkling of its nature from scent or sound.

If, then, a horse were really to pick out four ladies from a long row of eighteen persons, it would inevitably turn its head with pricked ears towards each of the persons in turn. Instead of that "Princess Trixie" kept her ears back and did not of her own accord move her head or even her eyes—so far as I could see—at all. I was, in fact, convinced that, so far as the mare herself was concerned, she did not know, although she picked up the right blocks, what she was supposed to be doing.

From this observation alone I am confident that the mare has not the intelligence of a child of six nor any human intelligence at all. She certainly picks out the right figures and letters, but she does this as a matter of obedience and not from understanding the meaning of letters and figures as symbols of abstract numbers or of parts of the sounds made by the human voice.

As to the explanation of the means whereby the mare achieves her feats, I regard this as a matter of little importance. I should have a poor opinion of any public performer who allowed me to see how his tricks were performed. It is his business to mystify his audience; and when we say that "Princess Trixie's" trainer puts a clever performance on the stage we mean that he, fairly mystifies us as to his methods.

If I, as an ordinary spectator, could say with certainty how the tricks were done, I should call the performance a very clumsy one and quite unworthy to be put before the public.

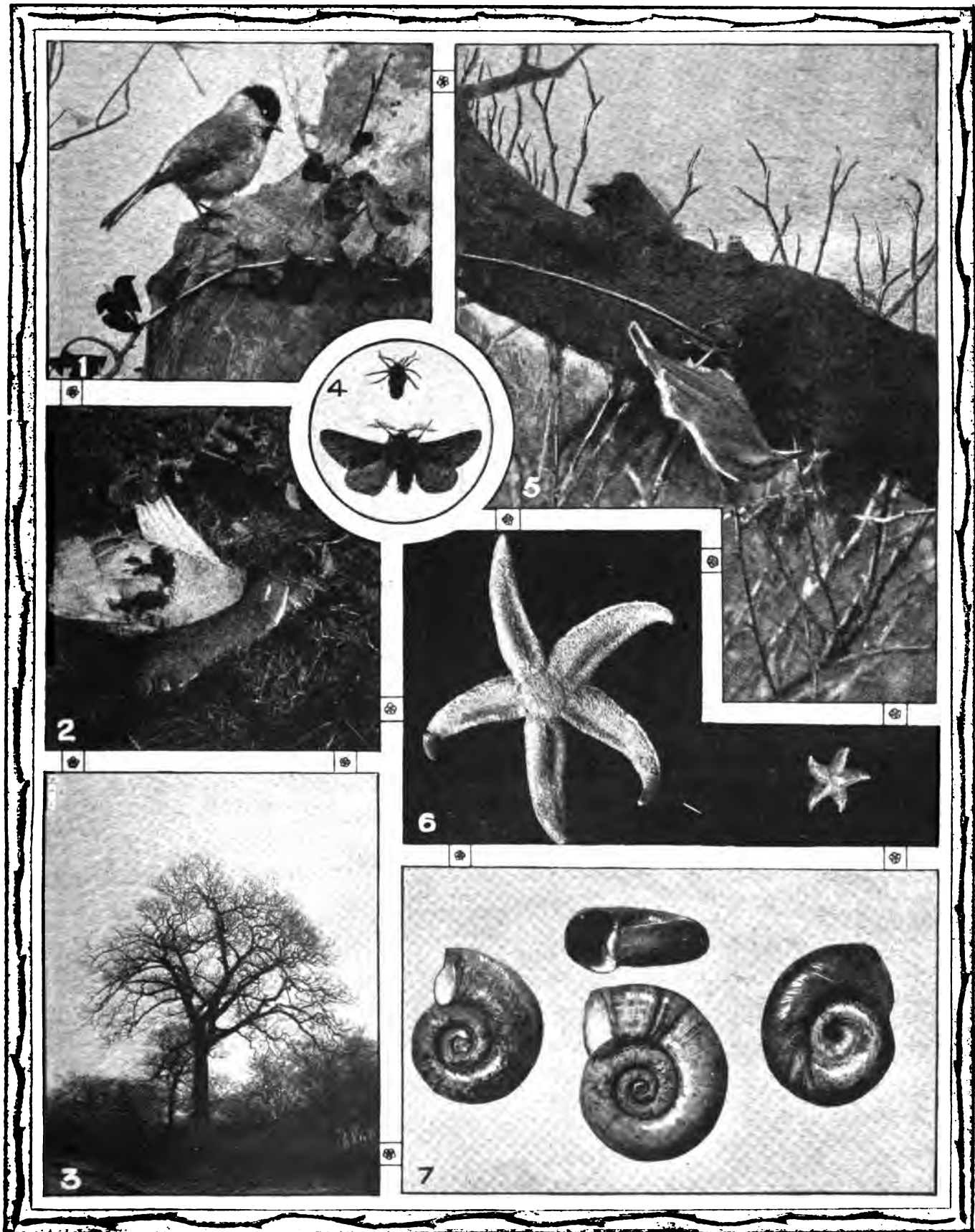
I think, however, that the necessary orders are conveyed directly to the mare by the trainer; and he uses so many motions of the whip, so many gestures, and so many words that any or all of these may be the means employed. Throughout the proceedings the mare is a picture of perfect docility, pleasantly varied by playful gambols, and she seems always on the watch for her clues; but it does not presuppose anything more than animal intelligence, if we believe that she can pick out any number, colour, or letter demanded by her trainer according to a system of secret signs which she alone has learnt.

However this may be, I do not think it necessary that one should say exactly how the thing is done, in order to be sure that "Princess Trixie" does not employ the intelligence of a child of six in performing her feats.

E. KAY ROBINSON.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 160.)



1. Marsh Tit, *Parus dresseri* (C. D. Head). 2. Weasel, *Mustela vulgaris*, on Partridge, *Perdix perdix* (T. A. Metcalfe). 3. Wych Elm, *Ulmus montana* (J. H. Crabtree). 4. Small Brindled Beauty, *Nyssia hispidaria*, Male and Female, slightly reduced (Copyright). 5. Nuthatch, *Sitta caesia*, running down branch (J. T. Newman). 6. Common Starfish, *Asterias rubens* (W. E. Little). 7. Ram's Horn Collshell, *Planorbis corneus*, natural size (J. C. Varty Smith).

The Microscope.

NOTES FOR AMATEURS.

WITH the advantage of the increased space that our new departure will provide, it is our intention to cater somewhat for those whose tastes and inclinations are towards matters microscopical by inserting occasional notes upon the microscope, its accessories, and some of the wonders that are revealed by that instrument.

At the outset let it be understood that the intention of these notes is to studiously avoid unnecessary technicalities in so far as may be possible; this journal is one that aims at the recreative rather than the strictly scientific side of Nature's handiwork, and in following this principle they will steer clear of many vexed questions that the scientific study of many of its items has induced.

An Inexpensive Hobby.

In the main, these notes will refer to low-power microscopy, a comparatively slight degree of magnification of the objects that are viewed. Many of the latter are familiar to us in their natural form, but failing a microscopical acquaintance, they are foreign to our sight. When the microscope first provides us an introduction, we then see them endowed with a beauty and richness of colouring, form and detail of which we previously could have had no conception. The principal of the items upon which we hope to treat, and also to illustrate, come within the capabilities of any ordinary inexpensive microscope, and it must not be assumed that a costly outfit of "brass and glass" is essential for a share of the interest and the pleasure that the instrument affords.

Range of Objects.

As other things, microscopes are articles that are often to be purchased second-hand at bargain prices. So far as objects are concerned the number of these is practically legion, on every hand, an abundance is to be found. The garden will provide items galore from the vegetable kingdom; the fascinating items of pond life are almost endless in their number, whilst from the seashore may be obtained material that the waves have thrown up that has singular beauty; the rock-pools at low water will also provide their contingent of marine life, both animal and vegetable, and also of that curious character, zoophytes, one that seems to be midway between the two; a walk in the country again will provide the microscopist with much to admire and examine.

Micro-Slides.

At home, after these products have been overhauled under the microscope, their permanent preservation as micro-slides will provide much pleasure and intelligent occupation on many a long winter evening. A little experience at this work will be the means of providing one with a selection of objects to which the preparer and his friends may often turn for pleasure and instruction.

Scales of Lepidoptera.

Most of us are familiar with the "dust" that remains upon our fingers after handling a moth or a butterfly. Here is a photograph of some of this "dust" as seen under a magnification of 18 diameters. Scales of the lepidoptera, for this is what the dust really is, vary greatly in form, even on the same wing; some are nothing more than straight lines, others are broadened out into "battledore" forms, and are graced by beautiful markings that have provided tests for the higher powers of the microscope. Not only are these scales

beautiful in form, but in colouring also, for it is these that provide the resplendent hues for which the majority of these creatures are by nature decorated. Each scale is furnished with a minute "handle" or "pedicle" by which it is attached to the membrane of the wing; they are arranged in regular rows,



Photo.] [A. H. Williams:
Magnified Wing Scales of the Silver Moth.

each row overlapping a portion of the next after the manner of slates upon a roof.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.*—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.*—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.*—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published. All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

SPECIAL ADVANTAGE FOR MEMBERS.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—Amount previously acknowledged, £14 1s. 3d. Since received:—1s. 6d., F. Cross Rose, Catford; 6d., "Anon"; 7s. 6d., J. W. Mercer, Bolton; 1s. 8d., A. Messer, Taranaki, New Zealand; 2s. 6d., H. J. Gray, Bath. Total, £14 14s. 11d.

Messrs. Dollond, who, as stated above, grant a large concession to members of the B.E.N.A., have sent me a booklet describing the new "featherweight" eyeglasses which they have invented. These are lighter, less conspicuous, sit more securely upright on the nose, and are 50 per cent. cheaper than rimmed glasses. All who have to use aids to sight should try these, after having their sight properly tested by Messrs. Dollond, or at least send to one of the above addresses for the free booklet which is called "A New Era."

Organising Secretary.—In order to cope with the growing work of the B.E.N.A. I have gladly accepted the offer of Mr. J. W. Mercer, 111, Chorley Old Road, Heaton, Bolton, to take over the correspondence connected with the organisation of the association, for the purpose of keeping the list of members correct and up to date, and maintaining constant touch with local secretaries and affiliated societies in all districts.

Branches and Affiliated Societies.—BIRMINGHAM: ERDINGTON AND DISTRICT NATURAL HISTORY SOCIETY (B.E.N.A.).—The charge for admission to the first annual exhibition of this society, including a concert, COUNTRY-SIDE lantern lecture, exhibition of specimens, and dramatic entertainment, to be held on February 8th in the Public Hall, Erdington, will be 1s., not 6d. only as at first announced. Mr. W. F. Wiemann, 22, Orchard Road, Erdington, is one of the hon. secretaries. It is hoped that all B.E.N.A. members in the Birmingham district will make a point of attending.

Local Secretaries.—HUDDERSFIELD DISTRICT, YORKS.—Mr. H. Squire Cheavin, Clematis House, Somerset Road, Huddersfield, has undertaken the duties of local hon. secretary for this district, including, with the town, Almandbury, Kirk-henton, Kirk-burton, and all suburbs, etc., within three-mile radius. Will all local readers who would like to join the B.E.N.A. communicate with him?

CROYDON DISTRICT.—Purley, Coulsdon, and all places within four-mile radius of Croydon are included in this district. The local hon. secretary is Mr. W. H. Baylis, 69, Canterbury Road, Croydon. Will all who desire to become members communicate with him?

RUNCORN DISTRICT.—Mr. W. Rutter, 32, Balfour Street, Runcorn, has undertaken the local hon. secretaryship of this district, in succession to Miss H. Jackson, who is now hon. secretary of the Castleford district of Yorkshire.

SOMERSETSHIRE.—Mr. W. Wallace Macmillan, Bellevue, Castle Cary, offers to work as a local secretary in Somerset. Will other members and readers in that county, who are interested, communicate with him, with the view of forming one or more branches in Somersetshire?

B.E.N.A. Motto.—Among other mottoes which have been suggested for the B.E.N.A. are the following:—

"Come out into the light of things,

Let Nature be your teacher."

"By Nature joined, true friends are we."

"Through Nature, heart now answers heart."

"Love of Nature gives us eternal youth."

"To link us in a common love

For Nature's gifts."

"Sweet is the law that Nature brings."

"Students of harmonious nature,

One with Nature.

"Neath sky, on sea or land,

We are one with nature."

B.E.N.A. in Signature.—The question is asked whether members are entitled to use the letters "B.E.N.A." after their names. Assuredly they are; and the more they do it the better. I am glad to have seen that, in more than one case, members have the letters printed after their names in the headings of official correspondence.—(to No. 2,545.)

Identification of Specimens.—The undermentioned will be glad to identify specimens for members, as stated, provided that postage for reply and return of specimens, if desired, is enclosed:—BIRDS AND EGGS: *Howden District, East Yorks.*—Mr. Fred Oats, Chy au Kernow, Howden, E. Yorks. DIPTERA (TWO-WINGED FLIES), provided that the specimens are sent in a decent state of preservation, Rev. W. J. Wingate, St. Peter's Vicarage, Bishop Auckland, Co. Durham.

Enrolment of Outside Members.—The question has been raised whether local secretaries will be acting properly in enrolling as new members suitable persons whom they chance to meet, but who do not reside in their districts. The answer is, Certainly. In the periodical reports which our local secretaries will be asked to make to the organising secretary, Mr. J. W. Mercer, 111, Chorley Old Road, Bolton, these names of outside members will be included and will be transferred by him to their proper district and the proper local secretary notified thereof.

"DAILY MAIL."

The Naturalist's Daily Newspaper.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

AN important arrival to be chronicled is that of the Frigate bird (*Fregata aquila*), for though this remarkable creature has been represented in the gardens before, this was more than twenty years ago. The bird in question lived seven years, showing that this pre-eminently aerial type is nevertheless able to bear captivity.

The Frigate bird is widely distributed over tropical seas, and is very distinct in appearance from all other sea-fowl, with its high-soaring kite-like flight; it is almost always on the wing as it hardly ever settles on the water, and on the ground can only hobble along with very short awkward steps. It prefers to perch on trees where there are any, and if possible builds its nest there. Like the skua-gulls, it is a piratical bird, and even the active terns have to "stand and deliver" when the Frigate bird bids them.

The bill of this bird is very like a cormorant's, and looks strange with the swallow-like body; its feet are very small, but have all the four toes webbed, as in a cormorant, though the webs are little developed. This seems to point to the development of the Frigate bird from an ancestor which was more aquatic and less aerial; but as many land birds have partially-webbed feet—the common fowl, for example—it may merely be the beginning of a web which has been further developed in the swimming relatives of the Frigate bird, such as the gannet and cormorant, while the Frigate bird itself may never have been a swimmer at all.

The bird in the Zoo is a young one, as its white head shows, old birds having the head black. Indeed, the old male is black all over, except for a scarlet inflatable pouch he bears on his throat. In length this bird

has black wings and face patches and only a few black feathers elsewhere, thus presenting a regularity of marking rare in abnormal varieties.

In the Reptile House the axolotls (*Amblystoma tigrinum*) are breeding, after an interval of years; these curious creatures, however, breed regularly in captivity, and a white variety is so common that it is doubtless an established breed. I can remember seeing both black and white ones when I was a boy.

The axolotl can thus be ranked as a domesticated amphibian, and as such is unique in its class. The tadpoles are like those of our newts, and the curious thing about the axolotl is that it is usually a permanent tadpole, so to speak. That is to say, although it grows legs it never loses its gills, though becoming sexually mature and regularly breeding. Sometimes individuals go further, lose their gills, and become quite ordinary salamanders, so that the whole history of the creature is full of interest. Not the least remarkable thing about it is that in its native Mexico it is an article of food, though few edible creatures are less appetizing in appearance than these great inky-black newts.

Nature Records of the Week.

Sent in by Readers of "The Country-Side."

GENERAL NOTES OF THE SEASON.—Up to January 21st, when the weather suddenly became much colder, many signs of coming spring were reported from different quarters. Besides the butterflies and birds' eggs recorded below, hazel catkins fully out, mouse-ear and common chickweeds, shepherd's purse, field madder, dog's mercury, groundsel, daisy, dandelion, gorse, primroses, milkwort, white

LITTLE AUK picked up under a telegraph wire at Huntly, Aberdeenshire, on January 4th.—(Alex. MacGregor.)

BITTERN killed near Ipswich during hard weather after Christmas (W. Goodchild); shot near watercress beds which it had haunted for a fortnight in January, near Pickering, Yorks.—(T. A. Metcalfe.)

WILD GEESE: Large flocks seen near Hungerford, Berks, at Christmas.—(L. A. B.)

BLACKHEADED GULLS in summer plumage at Weston-super-Mare, January 19th.—(C. P. Wiseman.)

BUZZARDS: A pair, believed to be rough-legged, seen in January near Ipswich.—(W. Goodchild.)

ROUGH-LEGGED BUZZARD trapped near Wells, Norfolk. This, I regret to say, is the bird previously recorded by myself from the same neighbourhood.—(E. K. R.)

Rare Birds Shot.

LITTLE OWL (*Athene noctua*) shot recently at Potton, Beds, making the third shot since last June.—(J. H. Symonds.)

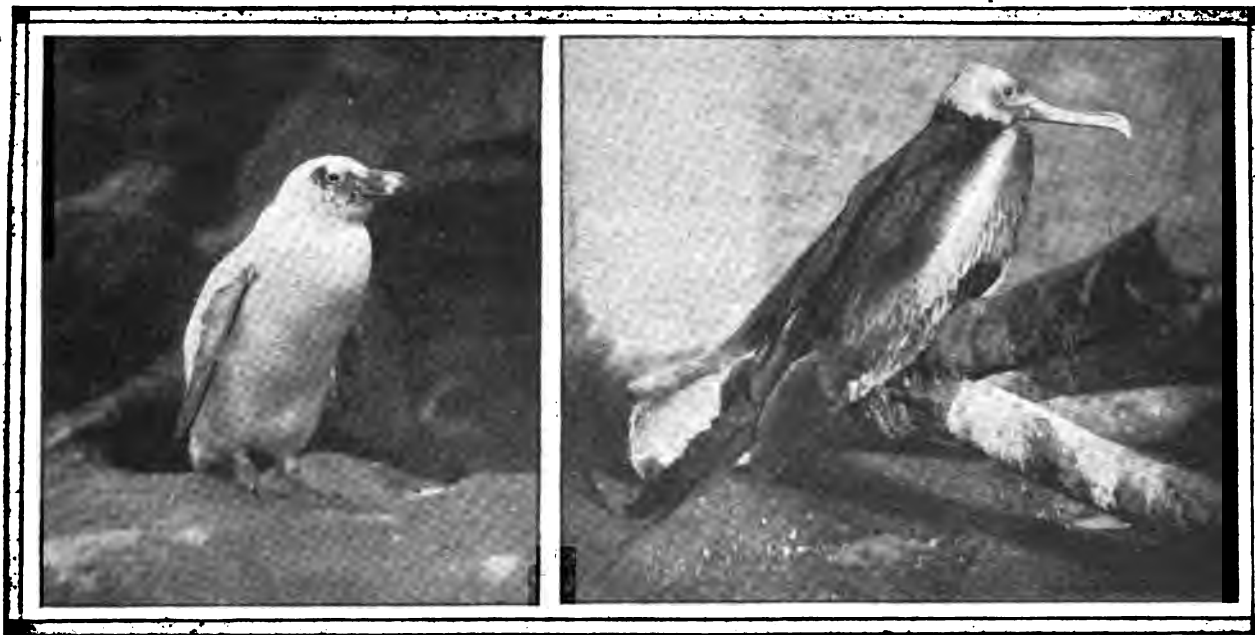
WHITE-WINGED LARK (*Melanocorypha sibirica*) seen near Deal in mid-January.—(G. B. N.)

Early (or late?) Nests.

STARLING: Four young hatched December 21st above door of Howden parish church, E. Yorks (F. Oats); sitting on clutch of eggs near Clock Lighthouse, Firth of Clyde, January 16th.—(C. D.) **SONGTHRUSH,** egg picked up, January 16th, near Tunbridge Wells.—(L. W. Down.) **ROBIN** sitting on eggs in a garden at Edmonton, Middlesex, on January 7th.—(G. H. Vos.)

Birds' Song.

SONG THRUSH in full song in Hants, Surrey, Wores., Lancs., Norfolk, Glos., up to January 21st.—(From many readers.) **BLACK-BIRD,** on January 13th at Botley, Hants (Lady M. S. Jenkyns); at Shouldham, Norfolk, on January 17th (Miss K. B. Brackenbury); December 28th on Streatham Common. "as the



[Photos.]

Semi-Albino Penguin.

Frigate Bird.

Two Interesting Additions to the London Zoo.

measures a yard or more, but its span of wing is more than twice that, and much of its length is made up by its long forked tail, so the body is really very small.

Another curious sea-bird, which I had not room to mention in my last notes, is a semi-albino specimen of the common Cape penguin (*Spheniscus demersus*) of which so many examples are now on view. The white bird

and red deadnettle, field speedwell, and other plants were in bloom; honeysuckle leaves were fully out; roses in gardens were still blooming; queen wasps, honey bees, and lady birds were observed abroad. Most of these records, however, came from the south, though Cheshire was well represented.

WEASEL, white specimen seen near Kirkella, E. Yorks, December 14th.—(T. P. M. Harvey.)

bird was only 12 feet above me there was no mistake" (W. E. Gillat); at Helston, Cornwall, January 17th.—(T. J. R.)

Butterflies and Moths.

BRIMSTONE BUTTERFLY seen flying, on January 13th at Botley, Hants.—(Lady M. S. Jenkyns.) **PEACOCK** and **SMALL TORTOISESHELL** butterflies on the wing at Hastings, January 18th.—(J. Halliday.)

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, FEBRUARY 2, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them.

All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Nature Study by Proxy.

By A. PATTERSON, "The East Coast Naturalist."

BY many individuals with strong natural history leanings, more especially by those whose lot is placed in inland towns, the restless ocean is only seen in imagination, and country lanes are places only read of.

I am not surprised that folks in large inland towns, to a certain extent surmounting their untoward environment, content themselves with "small" things, and find much fun out of home nature work, with microscope and dissecting table; while others taking their hard-earned leisure, and their insect net, or their botanical gear, train themselves to the outskirts of their towns and cities at scrambled intervals.

But usually "where there's a will there's a way," and the inland naturalist may find much real fun by pressing others into his service. What hinders one from forming a collection of birds if he chases? In his spare time he may pick up the art of taxidermy; there are good books on the subject.

Some of my most valued "data" have been based on observations made at a local game and wild fowl stall. Comparisons may be made by the use of good books, and the study of specimens in local museums.

Fish, too, may be studied, both marine and fresh water, at the local fishmonger's. I was astonished on one occasion at the display, the numerous species, and numbers, at a fishmonger's shop almost directly I stepped across the road from Liverpool Street Station. I saw more varieties in that one glance than I sometimes see landed nowadays in one day on Yarmouth Fish Wharf!

The game shop and the fish stall are worthy a passing look from day to day, for one never knows what's likely to turn up. Others have done the *catching*, it is easy for one to do the *sorting*.

This reminds me that I have in my time done much nature work this way—by proxy, I call it. It has been my practice for years, until lately, to leave addressed postcards at certain friendly fishmongers, who, directly some rare marine animal has come to hand, have dropped one of these missives into the nearest pillar-box, and the day hasn't gone before I have the stranger either in my possession or have well examined it.

As recently as last July I received a note from a well-known fish merchant, Mr. R. Beazor (who deserves mention for his many kindnesses that way), who wrote, "Call at shop, we have a specimen fish, of the mackerel species, caught locally," etc. Needless to say, I was soon there, and the fish was eventually identified by the British Museum authorities as *Scomber thunnina*, a species of Bonito new to Great Britain! I might have gone trawling, drifting, and seining half my lifetime on purpose to get one, and never succeeded. To my credit goes the fish, but two hours' loss of time covered all my outlay of labour!

I have for years made it a practice to keep in touch in a similar way with fish hawkers who peddle the streets with line

or trawl fish—sprats, mackerel, and the like. I have aroused their interest, in a superficial way, I must admit, by the offer of goodly prices for anything "funny," deformed, miscoloured, or that differs in any way from its brethren. By this means stunted, grotesquely-shaped, and otherwise uncanny examples have been brought me, and more than one rare species. A passing look in at a fish shop slab takes but a very small particle of time from one's dinner hour or leisure.

A few years ago I got into touch with the various boys who then (more than now) used to help the local shrimpers, and by verbal descriptions, and afterwards by means of coloured sketches given to them, or their skippers, made them understand what sort of fishes and other marine creatures I particularly wanted, having myself every reason to believe that the fishes asked for were likely to be found in the neighbourhood.

By this means some very rare species came to hand, e.g., the Eckstrom's Topknot, the Müller's Topknot, the White Goby, the Bubalis, and quite a number of others; some rarer, some commoner, and many, although interesting, quite useless, because I could follow the seine (draw) netters on the beach and pick them up myself. But one has to take the bad to get the good once in a while.

Last spring I was determined to do a little more work among local crustaceans. Our hardy shrimpers—some eighty of them—working with twelve foot wide dredges and small trawls, take daily in the finer months myriads, amounting, I might say, on the whole to tons, of common sand shrimps (*Crangon vulgaris*) and "pink shrimps," i.e., *Æsop's* prawns (*Pandalus annulicornis*). And among these must certainly be found many rarer species, if the men would only take the trouble to save them, as well as the pains to spot them. I had tried over and over again, but they only let me have "things" in a haphazard manner. I offered them tips and tobacco, the latter a most "deadly lure" to these pipe-loving fellows! But no! the fish or shrimp either "Got lost bec'os I didn't come!" or "Got dry-a-waitin', and was hull'd over!"

Now, last February, the shrimpers had their annual smoker, given by a jolly waterside missionary and his friends. A sane and pleasant evening was spent, with recitations, songs, and tobacco galore, but nothing stronger. I volunteered to interlard one of my lightning sketch *entrées*.

After the smoke had "evaporated" sufficiently to show the charcoal "streaked" on the sheets held up by the easel, I let go in merry mood, sketching men, boats, ships, and a score of tableaux exactly adapted to their sphere and fancies. Needless to say I brought down the house, and aroused their great goodwill.

On top of that I scoured the local lawyer's offices and those of others, and begged all the empty "gloy" bottles I could get. I washed and scoured them, half filled them with formalin, fitted bungs therein, and my "traps" were ready. I chatted with certain of them, and told them I would supply them with bottles if they'd take the trouble to drop in any small thing—fish, shrimp, etc., that they thought might interest me. These bottles have wide mouths and broad bases, and do not easily topple over.

I then took into my employ, at a very small weekly fee, a crippled shrimper (who had lost both feet by a railway accident), who readily undertook to distribute and gather my bottles at intervals; and with them hidden in his bicycle chair he started on his travels.

The men, of course, were only too glad to help their handicapped chum, and the scheme worked admirably. By this simple means I obtained some good crustaceans and fishes, among the latter two new to the county, viz., Jagos Goldsinny (*Ctenolabrus rupestris*) and the Megrim (*Arnoglossus laterna*).

I have a friend who is "gone on" Polyzoa and other minute forms of life. He gets out on his bike when most folks are asleep, and begins his business with the earliest of them. But he has a wonderful knack of slipping a small bottle into the hands or side pockets of friends whom he knows are off into the country.

"Dip this in such and such a ditch, as you go past!" says he; and he is a disobliging friend who can say him nay. And the bottles come home in due time; their contents are emptied into his store beakers, and presently, curious to know why so great a quietude obtains after a long jolt in darkness, out comes some beautiful *Rotifer*, or *Floscularia*, or *Plumatella*. And my friend laughs in his sleeve.

A man does not need to be rich or leisured to be a passable naturalist; he succeeds by making the most of his wits and of circumstances.

From a Gamekeeper's Notebook.

By "GAMEKEEPER."

IN spite of persecution which continues, more or less, the whole year round, there are few localities which are absolutely rabbitless. There are also few rabbits which, at some period of their career, do not get into trouble through stripping trees and underwood of bark. Sometimes rabbits bite off infant tree trunks and young shoots as neatly as if the operation had been performed with a sharp pruning-knife.

Of course, when this barking and biting is done in a wholesale manner, the resulting damage is a serious matter. Whole plantations of young trees and acres of underwood may be utterly ruined by rabbits in a few weeks; in fact, the very capital of valuable woods may be lost; for, if the young shoots growing from underwood stumps are continually cut or bitten off, the stumps themselves very soon die, while comparatively slight wounds are fatal to young trees.

I have in my mind's eye some woods in Hampshire, once the glory of the district. Their rabbit population was allowed to increase beyond all reasonable bounds, and now—well, the last time I saw these grand woods, there stood the great timber trees, without a living stick of underwood for ten acres at a stretch. And now—when it is too late—the stock of rabbits has been rigorously reduced. To replant these woods, to bring again their departed glory, would cost a king's ransom.

When rabbits eat the bark of underwood, young and old, to such an extent as this, the reason is the absence of more natural food; or, because snow has prevented access to it. When a rabbit-infested wood is wired in, with the idea of protecting crops in adjacent fields, it often happens that the rabbits, in their efforts to ward off starvation, do far more serious and irreparable damage within the enclosure than would have been the case, had their range been less restricted.

But scarcity of their customary diet is by no means the sole reason for rabbits eating bark, which they partake of primarily as a medicine to counteract the effect of herbage rendered too laxative by wet and frost. The bark on the older growths of underwood becomes astringent earlier in the autumn than that of young growths, because the sap in the latter runs longer, which is shown by the leaf remaining on later. The leaf on old

wood falls a fortnight or more in advance of that on young wood.

There is no doubt, too, that the astringent properties of underwood bark vary considerably according to the soil. Moreover, the nature of the soil often varies considerably in different parts of a covert a few acres only in extent. It is interesting to watch how the rabbits go for the bark in one particular part.

It also seems to me that the bark of underwood which has been cut before the fall of the leaf, and has lain for some weeks on the ground, assumes its astringent properties much sooner than that of

not, to avoid risk of infection by the highly probable medium of a handkerchief, I feel certain that the bodies of pigeons whose throats show the unmistakable, congealed, honey-like excrement of the disease, are not injurious as food.

The birds keep in fine condition till the growth in their throat prevents swallowing. I examined a pigeon recently, whose throat for two inches felt the size of a sausage, and yet the wretched bird was still able to fly fairly. I should be much interested in scientific investigation of this pigeon plague, which, I think, originates in overdoses of tannin from a too abundant and exclusive acorn diet.

The Handling of Swans.

Our illustration represents what is described as "the only safe way of holding a swan"; and as it is reproduced from a photograph taken in the largest swannery in England, whose keeper has had experience of all sorts and conditions of swans, I have no doubt that it is the most proper method of handling this large and awkward bird.

All the same I cannot help thinking that in the description of this as "the only safe way" the meaning must be "the only safe way for the swan." I have often handled swans myself and find all ways within reason equally safe to the operator. If you hold a swan gently by the neck, it will sit down and wait until you let it go. If, then, you like to pick it up and

tuck it under you arm you can do so; indeed, we have published in THE COUNTRY-SIDE, a picture of a lady comfortably carrying a large swan in this way; and when the time comes annually round for clipping our swans' wings, no one who undertakes the job ever finds any difficulty in holding the swans while the feathers are cut.

Indeed, the more intimately you know swans the less you respect them, although you can never cease to admire the splendour of their attitudes. An angry male swan with up-curved and quivering plumes, as he deliberately marches out of the water towards you, is an awe inspiring spectacle, and unless you know your swan, retreat seems to be quite the discreet thing.

Nor will I deny that a swan who is given the opportunity of assaulting an enemy from behind will always refrain from smiting. But if you face the most infuriated swan, I believe that you could always drive it where you wish with a pocket handkerchief.



Photo.]

[A. Ullge.t.

How to carry a Swan.

From a photograph taken in the largest swannery in England.

standing, though leafless, wood. The bark on such cut wood has the flow of sap arrested, while that remaining in it, after cutting, soon dries up to suit the instinctive taste of the rabbits. I have always noticed that the first bark of all to be stripped by rabbits is that on ride-trimmings, lopped, as a rule, in July and August.

And this goes far to explain the tender young shoots of hazel, ash, and withy or palm, nipped off by rabbits, and left untouched; for, later on, the bark on these—apparently wantonly destroyed—is eaten. When first sampled by astringent-seeking bunnies, the sappiness of the bark rendered its medicinal properties unattractive.

Again, during the last month or so, the wood-pigeons have been dying freely from the same disease I wrote of last year. I still adhere to the idea that a too bountiful acorn diet is the indirect cause. Though I should advise everyone to be careful, after examining the throat of any pigeon, whether it looks sickly or

Questions worth Answering.

PRIZES FOR READERS.

WE propose to give from week to week a number of interesting questions on all kinds of subjects in keeping with THE COUNTRY-SIDE. We invite readers to send in brief answers to these questions, and for the best answer received each week we shall award a prize of five shillings. Below are a number of questions that have reached us from various sources, and some have been answered to show the kind of replies that are wanted. Answers are invited to the eleven questions at the end. No reply should exceed 100 words in length, but they may be less, and answers each week must reach us by the Monday following the publication of the paper. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C.

Why are Cripples from birth usually bad tempered?

Because, when they were young, their parents and all who came in contact with them were so filled with pity for them as to give way to all their whims and neglect discipline altogether. This surely bears its fruit in after life when, for lack of early training, the cripple is impatient and petulant.

When birds are supposed to sleep with their heads "under their wings," what is their real attitude?

They turn their heads over, and not under their shoulders, and bury them comfortably between the plumage of the back and the soft feathers on the wing where it joins the body.

How can you distinguish between pines, firs, spruces, larches, and cedars by their leaves?

Pines have evergreen long needles; firs have evergreen short needles arranged in rows on each side of the twig; spruces have evergreen short needles arranged all round the twig; cedars have evergreen short needles arranged in tufts; larches have short needles arranged in tufts like cedars, but they are not evergreen, the trees being bare in winter.

What is the difference between the songs of the song thrush, missel thrush, and blackbird?

The song-thrush has a number of different short phrases, each of which it repeats several times before uttering the next; the missel thrush uses one longer phrase, which it repeats as if calling out a message time after time; the blackbird also uses a long phrase and repeats it time after time, but it whistles deliberately like a musical performer, instead of calling out a message.

Which is the greediest of birds?

None is greedier than the cormorant, which seems to have no idea at all of moderation. It will eat until it is too full to move, let alone fly, and then its only option is to sit still in some quiet spot until digestion has performed its arduous task.

How long have dogs been known in Britain?

They were known in Roman times, five different species being recorded during the

Roman occupation. Four of these at least can be identified with present day species—the greyhound, bulldog, terrier, and slowhound.

What bird stores acorns in a curious manner for use as winter food?

This bird is the Californian woodpecker, which has a habit of studding the trunks of trees with acorns. They are deposited in small holes, which the bird itself makes, and the acorns being left visible naturally give the tree a curious appearance.

Why do dogs turn round several times before they lie down?

This is one of the ancestral traits of the dog, which, although it may seem a foolish practice now, had its use in by-gone ages. When the dog was a wild creature and slept in the tall grass of the jungle, it used to turn round several times in order to make a comfortable bed and the habit has never been outgrown.

Is the capercaille a British bird?

This bird was at one time a natural denizen of Great Britain and Ireland, but it was entirely exterminated about 1760. Nearly a century later—in 1837—it was reintroduced into Scotland, and since that date it has largely increased in number and range until now it is found in Perthshire, Stirlingshire, and other counties. It is, therefore, a naturalised British bird.

Is there any evidence that the barn owl is the "friend of man," as it has been called?

Perhaps the best answer is to repeat what Seebohm says about the contents of seven hundred pellets which were examined. In these were found the remains of sixteen bats, 2,513 mice, etc., one mole, and twenty-two birds of which nineteen were sparrows.

Why have cats little fear of serpents?

This lack of fear for poisonous serpents on the part of cats has often been noticed, and the explanation doubtless is, that in a wild state cats are in the habit of killing and eating all kinds of snakes, the rapidity of the cat's movements rendering the snake, which is a comparatively slow creature, incapable of defending itself.

What effect has the introduction of motor-cars had upon the wild life of the country?

How is it that such soft things as growing mushrooms can force up heavy paving-stones?

Why do an elephant's hind legs bend forwards?

What causes freckles?

Why are grasses so widely diffused throughout nature.

Why do some leaves undergoing decay turn yellow and others red?

Why cannot we see ourselves in a piece of plain glass as well as in a mirror?

Is the London Zoo the largest and oldest institution of its kind in Great Britain?

Why do white spots occur upon the nails?

Has a man ever walked on the ceiling?

Why does not the opening of a window stop a chimney smoking better than the opening of a door?

Mixed Bag.

Candles as Bird-food.—About an inch of tallow-candle was on one occasion found in the stomach of a stormy petrel.

Aged Pigeons.—There are cases on record in which pigeons have been known to live in captivity for over thirty years.

The "Frog-Trade."—In America one firm alone is stated to deal in edible frogs to the extent of £10,000 per annum.

Tern and Daddy-Long-Legs.—A common tern, whose crop was examined, was found to have eaten a quantity of daddy-long-legs.

A Long Insect.—The longest known insect is undoubtedly the stick insect of Borneo, of which specimens over thirteen inches in length have been captured.

The Dragon-Fly's Ancestry.—A dragon-fly which measured more than two inches across the expanded wings is known to have existed during the coal age.

A Risky Drink.—Bees when gathering honey are passionately fond of a drink of water, and numbers are drowned through slipping into it.

Who is Mother Carey?—Mr. Booth suggests that the name Mother Carey's chicken, which is given by sailors to the stormy petrel, is a corruption of "Madre Cara" addressed by pious-seamen to the Virgin.

Why the Chough is Rare.—It is said that one of the reasons why the chough is so scarce is because the young birds are such clumsy fliers that they fall an easy prey to hawks.

Falconry in the Drawing-room.—An instance is recorded from Ireland, where a gentleman, hearing a crash of glass in his drawing-room, was astonished on entering to find a peregrine falcon killing a woodcock.

Why Birds Bathe when it is Raining.—It seems curious at first sight that wild birds are fond of a bath even when it is raining. The reason for this apparently is that the rain cannot wet them underneath.

The "Nauseous Bird."—The first mention of the dodo dates from 1598: From the Dutch it received the title of "Walghvogel," or "nauseous bird," an allusion to the fact that its flesh was not pleasant.

"Goose-summer" and Gossamer.—Some suppose that the word "gossamer" is derived from "goose-summer," because Michaelmas, when gossamer is most in evidence, is also associated in our minds with geese.

Elephantine Birds.—One species of the moas, the extinct giant birds of New Zealand, is stated to have been at least ten feet high. Owen describes the toe-bones of another as being as massive as those of an elephant.

Bat in Rabbit Skin.—Of all the curious places chosen by bats as sleeping quarters, none is, probably, more so than the hanging skin of a rabbit, in which a bat was discovered at Leytonstone in Essex the other day.

Surplus Males.—Mr. J. C. Bristow Noble, writing in the *Field*, has stated that in every litter of young rats there were more males than females. Thus in a litter of thirteen it will invariably be found that seven are males and six are females.

The "Poisonous Spider."—Shakespeare, in his "Winter's Tale," makes Leontes say:

"There may be in the cup
A spider steep'd."

An allusion to the fact that spiders were considered to be poisonous.

Foxes and Fowls.—Where foxes were very numerous and thoroughly wild it is said that, although hens may roam all over the place, not one will be taken. It is suggested that the habit of foxes taking hens may be due to fox-preserving to excess.

Eagle Chases Terrier.—Whilst engaged in fishing on one of the mountain streams of Connaught a gentleman was surprised to see his fox-terrier, which had strayed, come yelping into view hotly pursued by a golden eagle which retired on seeing a man.

Amateur Photography.

PHOTOGRAPHING LIVING FISHES.

By Walford B. Johnson.

OF all the branches of camera work which strongly appeal to the naturalist there are few so fascinating as the photographing of living fishes. Much has yet to be learned about these denizens of the water, for, by their ceaseless activity, they so easily baffle all attempts to study them in their native element. However, carefully prepared photographs will often bring out interesting points which were unnoticed in the moving fishes.

The first requirement is a special tank in which to place the subjects during the operation. It would be superfluous here to enter into the details of its structure, so we shall be content with a short description of its necessary parts.

The most useful vessel for all-round work is one made of stout zinc, with glass back and front. A convenient size is 24 inches long, 18 inches high, and 6 inches broad. The glass used in its construction must be carefully selected and quite free from bubbles, smears, or scratches. If the operator knows anything of soldering he will be able to construct a suitable tank with very little trouble or expense, but if quite foreign to the tinman's art he had best solicit the aid of a professional in such matters.

The tank ready, the next thing requiring attention is a selection of suitable backgrounds, such as stones, sands, and weeds. The first may be found in plenty in any garden, sharp-angled, rock-like specimens being the best for the purpose. The sand should be the red builders' variety, which has been subjected to a vigorous washing.

All the loam must be removed before it is of any use, and the washing is not complete until the water remains absolutely clear when the sand is disturbed.

The weeds may be purchased or taken from their native streams or ponds according as to whether they are to be used for fishes dwelling in rivers or in stagnant water. When procured they should be sorted, well washed, and tied in small natural-looking bunches, with bits of muslin or similar soft material which will

not cut the stems. Each bunch should be weighted with lead or stones, and then carefully placed in a tub of clean water until required.

Another form of background is necessary to place in position behind the tank. This should be of paper, or, better still, of uncreased card of a cream or greyish tint. White is too glaring, and liable to render the fishes as silhouettes on the finished pictures. When all is ready place the sand in the bottom of the tank, and in it some of the bunches of water-weed. Care should be taken that the tying and sink-

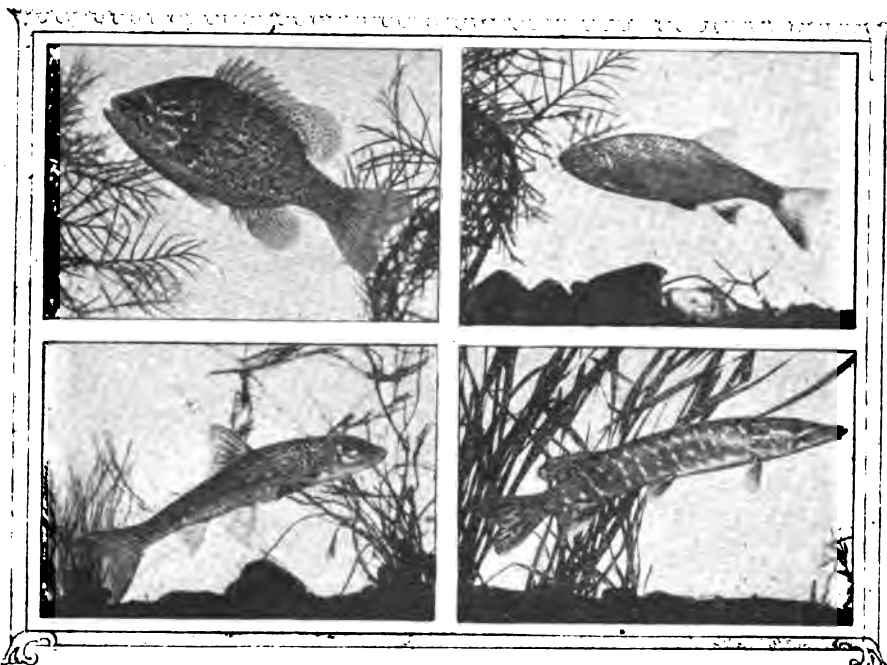
stir up some of the sand and weeds. However, after awhile it will resign itself to its fate and become more sedate in its movements. If the weeds were properly weighted and the sand quite clean in a few minutes everything will be right again. The fish will be sure to choose the darkest corner, so that with some smooth piece of stout wire it should be gently, very gently, prodded until it has assumed a suitable position. It must then be focussed up with all possible speed, and its exact position in the tank carefully noted.

When the plate is in position and the shutter adjusted, the operator should have the bulb in one hand and in the other the piece of wire already mentioned. As soon as the fish can be coaxed to its original position again the exposure must be made, for it will not stay there long. This is the method we employ for such specimens as

tench, loach, and all heavy-bodied fish, which spend most of their time lying on the bottom.

When the "sitters" are roach, dace, and the more lively species, the following is a good plan. Procure a piece of clean glass a trifle smaller than the side of the tank. Insert it in a slanting position so that one edge touches the front pane just below the sand level and the other lies against the top of the opposite pane.

This will divide the aquarium into two distinct parts. In the back half will be the weeds, stones, etc., and the other will



[Photos.]

[W. B. Johnson.]

Freshwater Sunfish (*Eupomotis gibbosus*).
Gudgeon (*Gobis fluviatilis*).

Rudd (*Leuciscus erythrophthalmus*).
Jack (*Biox lucius*).

Fishes photographed in water.

Full particulars are given in the article as to how excellent fish photographs, such as these, may be obtained.

ing materials are quite hidden from the camera's view. The natural appearance of a river bottom will be completed by arranging some of the stones in suitable positions.

The photographing aquarium is now ready to be placed in a well-lighted position with the sheet of cardboard behind it, and at a sufficient distance to prevent any shadows of the tank from falling upon it. If standing long in brilliant sunlight the weeds will exhale oxygen freely. This will appear as a number of bubbles all over the plants, and give them anything but a pleasing appearance. Except at the actual time of exposing or focussing it is a good plan to shade the fish, weeds, etc., from the direct rays of the sun.

When the operator has fixed up the camera and focussed a suitable part of the tank, the fish should be introduced. It will madly career about and possibly

contain the fish.

It often happens that the scales of a bright silvery fish catch the light in such a way that they appear very dark coloured on the focussing screen. Should they be left like this the resulting picture would give a very wrong impression as to the true colouring. If, however, a piece of white paper be held far below the tank and between it and the camera, the scales will resume the silvery appearance.

The exposures should be as rapid as the light will allow, as even if the fish is lying still for a few seconds the nervous time it had undergone in its transference from the stock aquarium would cause it to breathe very rapidly, and the mouth and gill-covers are likely to be blurred if the exposure be not a fast one.

We have used very successfully Red Seal Plates at full aperture with exposures ranging from 1-45th to 1-90th of a second, according to the intensity of illumination.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page iv), sent from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Edible Dog-fish.—The "Huss," of which you enjoyed a meal, is a kind of dog-fish, commonly called the rough hound, *Scyllium canicula*.—(to JOHN KNAPP.)

"Country-Side" Competitions.—We hope to start more than one interesting and instructive competition shortly. The ability to do this is one of the advantages of the enlargement of the paper. See below.—(to Miss H. BLACKWELL, West Ealing.)

Cat Scratching Ears.—Cats very often suffer from ear irritation. This is often caused by canker, of which there are two or three sorts. Boracic powder is an excellent remedy. Make a funnel of a piece of paper and blow this down the ear. If the ears are much affected several applications will be needed.—(to Mrs. F. MOORE, Plymouth.)

Birds for Aviary.—With constant attention the aviary would accommodate twenty-five to thirty birds the size of a sparrow. But a smaller number is safest, and large birds should not be attempted, and as a rule insect-eaters and seed-eaters should not be kept together. A pair each of goldfinches, bullfinches, siskins, redpolls, and one or two cocks each of greenfinches, linnets, and twites, cock chaffinch, yellow-hammer, and a pair of hedge accentors will make a nice and varied collection both for beauty and song. All are seed-eaters, except the last three kinds, for which a little insect food must be provided.—(to BERTIE FURBY, Weymouth.)

"Moth in December": A Correction.—On page 128 you inform Mr. C. F. Bilson, Swindon, that the mottled umber moth (*Hybernia defoliaria*) appears in October, and that December 18th is late for it. Barrett says, in the "Lepidoptera of the British Isles":—"On the wing usually in November and December, occasionally as early as October. Should there, however, be any continuance of severe frost in these months emergence is deferred till January, or even February; this happened in 1864, and to a considerable extent in 1891, and in 1895 belated specimens were captured in March." I myself have generally found this species in November and December, but during the winter of 1904-5 I met with it from November 3rd to January 12th.—J. F. BIRD, Tintern, Mon. [Newman gives October as the time of appearance, and I do not remember seeing it later than November; but I have no doubt that Mr. Bird is right.—E. K. R.]

Bird Identified.—The bird enclosed was a dunlin (*Pelidna alpina*). There is great confusion about this bird (which is often erroneously called "the stint"), on account of its changes of plumage between winter and summer. You can identify it in this way, however. By its long bill and longish legs you know it is a wader. Because its beak is not very much longer than its head, you know it is not a snipe; and by its three free toes in front and very short fourth toe behind you know it belongs to the dunlin and stint class of sandpiper. Lastly, you recognise it as the dunlin itself, because its legs are black, it measures $7\frac{1}{2}$ inches in length, and its wings do not quite reach to the end of its tail.—(to T. W. HARVEY.)

Triple Nuts.—Double nuts are not uncommon; but I have, I think, only once seen three nuts joined together, like your specimen.—(to D. O. JENKINS.)

Linnet and Goldfinch.—The goldfinch is doubtless a hen bird, and the fact that the singing linnet feeds it shows that they have mated. If provided with nest materials they might rear some good mules.—(to G. HAMMOND.)

Plant Identified.—The spray sent and illustrated here is from a plant of *Garrya elliptica*, a very ornamental creeper with leaves resembling those of the evergreen oak and hanging



Photo.]

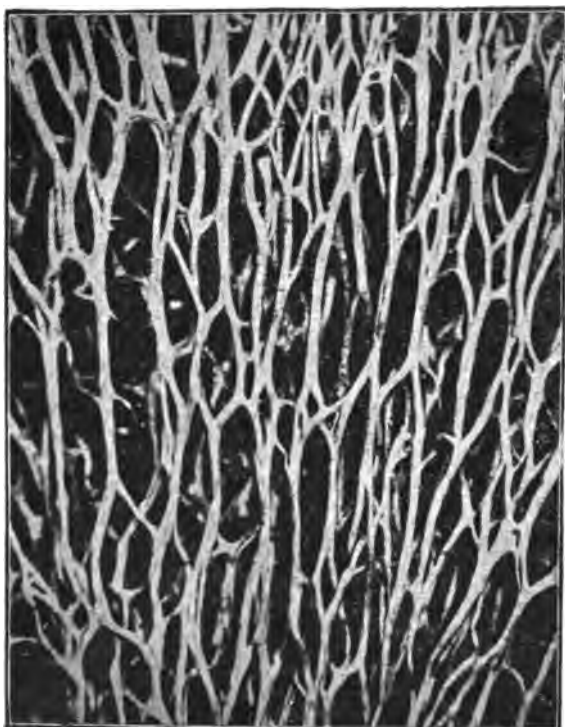
[G. B. NORRE.]

Garrya elliptica.

catkins which grow to a great length in February and March.—(to G. HOLMES.)

Wanted, a Poem of the Heavens.—Could you tell me of a suitable poem or recitation to follow an address on astronomy?—(E. W.) [Perhaps some reader can kindly answer this question for me.—E. K. R.]

Increase of Birds.—The reason why more birds and more kinds of them have in many places come to the bird-tables this winter, even before the spell of severe weather after Christmas, is that they have multiplied very largely during a succession of favourable years. The farmers also have found many more come to their crops.—(to F. G. OLIVER.)



What is it?

£1 for the Correct Solution.

Here is something quite new in skill contests for "Country-Side" readers. This photograph shows part of a common object in many of our households, and we want you to tell us what it is.

ONE SOVEREIGN will be given to the reader who sends in the correct solution, or if more than one are correct the pound will be divided.

The object, we may say, has been considerably magnified in photographing.

Now what do you think it is?

This is a skill contest of the best kind, for in studying the photograph you will be adding to your knowledge.

There is no chance about this skill contest, for the photograph represents one object, and only one object.

It is for readers to use their brains and powers of observation in discovering what the curious object can be.

Remember it is not some outlandish thing rarely seen. It is in many of our homes, in daily use, and can be seen in the shop windows of every town and every busy street.

What is it?

Address replies to—

"WHAT IS IT?"

COUNTRY-SIDE OFFICE,

2 & 4, TUDOR STREET, LONDON, E.C.

All solutions must be received on or before February 11th.

Livestock for Profit and Pleasure.

Poultry.

By "Chanticleer"

Anconas.

I N directing my readers' attention to the smart stylish Ancona fowl I have confidence in claiming for this useful variety a superabundance of energy and ceaseless activity at all seasons of the year with the commendable result that their owners are never short of eggs, which, compared with the small size of the breed, are exceptionally large, being generally about six to the pound.

They succeed admirably in confinement if given a scratching shed and care be taken not to overfeed; whilst when allowed their liberty they will become rather wild and wander for long distances in search of grubs for better foragers than the Ancona I have yet to meet. Their ceaseless activity and search for dainty morsels which "Dame Nature" so beautifully supplies in country districts makes them peculiarly suited to farms where with very little attention they succeed admirably and give a splendid return in eggs; although I would state their small frame renders them of little use for the table.

It will be seen from the drawing which accompanies my notes the Ancona demands attention as an exceedingly pretty fowl, being a handsome black and white mottled bird with beetle green, black feathers, each tipped with creamy white. The mottling has a greenish sheen which adds to the fowls' beauty.

The dark plumaged birds are nearest to perfection, providing the mottling is well distributed; whilst with age the plumage becomes of a lighter shade. As in all Mediterranean breeds the head-points are conspicuous both in cocks and hens. The former has a single upright comb with five well cut serrations and well set on the head; lobes, white and free from red stains; the hens have nice large overhanging combs of rather thin texture.

The legs are bright yellow and spotted or mottled; this is an essential point as it is strongly indicative of the true or original breed as found in Northern Italy.

The Ancona originated in a town of that name, and was the result of crossing the Black Italian fowl, known as the "Valdano," with the ordinary barndoor fowl of the district. Since its importation into England some twenty years since, they have been gradually improved both in type and utility properties.

Here I would give credit to the lady fanciers in whose hands they were for many years before generally known by poultry breeders. By careful observation the best layers were soon discovered, and by breeding year after year from selected birds, splendid egg producers were main-

Would-be Ancona breeders need be in no hurry to hatch early for I find that April, May, and even June chickens prove to be the most profitable. The young birds are very dark when first hatched, but when discarding their chicken feathers show the mottled feathers.

They are very precocious, coming to maturity very early and start laying in October or November, and continue right through the season until late in the following summer when moult, of course, sets in. I trust to find COUNTRY-SIDE readers giving Anconas a fair trial and feel sure they will be delighted at the regular manner in which this handsome little fowl fills the egg-basket. The cock's weight I should add seldom exceeds 6 lb. and the hen's about 5 lb.

Eggs from Mustard.

It is but natural that poultry keepers should take advantage of various kinds of foods, condiments, and tonics to improve the condition of their birds and induce the hens to perform in an advanced degree their natural function, which is to provide a plentiful supply of rich-flavoured breakfast delicacies. Probably the latest discovery in poultry feeding is the addition of a little Colman's mustard in the dry meal before mixing with hot water.

This has been found to be wonderfully beneficial to poultry, not only improving the health and giving tone to their system, but by invigorating the ovaries causes eggs to be laid in the coldest of weather in abundance, whilst fertility in the breeding pens is also assured when mustard is included in the fowl's diet.

DOGS.

THERE are several all engrossing topics interesting the dog loving community at the moment, the most important being that of the meeting this week between the Kennel Club and the Railway Clearing House, on the very important question of dog fares in transit to and from Shows.

It is probably the first time that the
(Continued on next page.)



Anconas.

These fowls are small eaters and excellent layers.

tained, and although for exhibition purposes some breeders have somewhat detracted from this excellent property, in most instances the Ancona maintains a splendid record.

They are indeed a "multum in parvo" fowl, for they are exceptionally small eaters and when at liberty prefer to find their own food; but whilst they roam away will be found always to lay at home, providing comfortable nest boxes are afforded them, also good warm night houses in which to roost.

The present month is excellent for mating up a pen of Anconas for breeding and here I advise five to six pullets (last year's hatch) with a 1905 cock or a vigorous young cockerel mated to two year old hens, but I prefer the former for choice.

Dogs.

(Continued from page 169.)

railway authorities have been moved to listen to a discussion on the subject, and it is to be hoped, therefore, the intentions of this great traffic board are on the "give" side, and not as heretofore entirely on the "take." Fortunately the Kennel Club have an excellent brief, none the less powerful that it has the advantage of all documentary evidence and arguments which have characterised other advances by the Kennel World on previous occasions to the same autocratic railway body.

If at first you don't succeed, try try, try again, is the old schoolboy axiom well exemplified in this appeal. Periodically since the establishment of the Kennel Club, has the Clearing House Board had laid before them papers showing why concessions in dog fares should be made to the exhibitor similar to those allowed the farmer and agriculturist.

These include a return to and from exhibitions at single fares, with special, comfortable accommodation for exhibitors and their attendants. Whatever commercial reasons the railway companies may have had for declining to make these concessions hitherto must certainly no longer exist, and the *Illustrated Kennel News* gives this week very conclusive reasons why the railway companies should, in their own interests, meet the demands of a vast public who provide one of the railways' most productive sources of income.

It will be interesting to learn the outcome of the meeting and for the prosperity of the dog-world we wish the Kennel Club appeal every success. It is a concession they have earned by work which has more than quadrupled the traffic of dogs on the railways, even within the limits of the last fifteen years.

Cruft's Dog Show.

Next in interest, perhaps, is the forthcoming Dog Show known as Cruft's, which has been one of the successful annual institutions which Londoners look forward to, an event which attracts dog fanciers from all parts of the equator. Cruft's Dog Show is the, so to speak, commercial dog show, where dogs change ownership to such an extent that it might be termed the dog-Aldridge's.

Cruft's show prides itself also in having always some surprises in store, such as sensational wins, daring meetings for the changing of kennel policy, specialist controversies and elections, and may be said never to be a dull show. All and various kinds of people and types of dogs are found at Cruft's that are rarely seen elsewhere, and the show of dogs is prodigious. This year the date for closing entries was January 28th; that is to say, any person wishing to enter a dog for competition had to send in particulars on or before that date. The show is always held at that centre for shows of this character, the Agricultural Hall, Islington. As it is a winter show, those who have never exhibited before should see that their dogs have good wraps and are sent in really comfortable lined hampers.

Ears.

There is a great stir just now as to the wisdom of the Kennel Club in interfering

with the types of dogs which their circular of enquiry "as to the advisability of disqualifying bull dogs with tulip ears" has occasioned. Our contemporary, the *Kennel News*, has just given a capital object lesson on the subject, and an article by D. Hay Hutchison cannot fail to convince any lover of form that the rose ear is most certainly the ear to be encouraged. Take the four types as exemplified in the diagrams given. No. 1, the "Erect," most certainly gives an unnatural expression. No. 2, the Tulip, lends a ferocious aspect, most undesirable in a dog kept as a companion. No. 3, the "Button," completely changes the character altogether. The brief in favour of the rose ear is very convincing.

But it is quite another question whether the natural ear of a dog should be made more of a disqualification than they at present labour under, *viz.*, by having to give way in the prize list to the rose ear which carries judicial favour, as well as taking its first place in the rules as to type laid down by the clubs appointed to the breed. The outcome of the controversy is watched with great interest, more especially by those where kennels find it difficult to keep up to the standard of rose ears.

Cats.

THE Southern Counties Cat Club recently held their annual show at the Horticultural Hall, Westminster, and it was interesting to note how many names of male exhibitors were entered in the catalogue. The prejudice to "poor puss" is much more generally found amongst the male sex, so it is a pleasure to know that the "mere man" is beginning to appreciate her qualities and do justice to her real nature.

A clever writer has stated very truly that no one need deem it unmanly to be good to a cat. Yet mankind generally always seem a bit ashamed of even a weakness for these animals, and will abuse a cat because she is so unlike a dog! But, rightly viewed, the qualities of the dog and the cat are not antagonistic, but complements of each other.

No one can keep several cats without realising that there is a wonderful difference in their personalities. So much depends on the amount of trouble and understanding that is given to these strange creatures by the people with whom they live. If a cat is treated cruelly, or even with neglect, she will move through your house a mere mouse-catching machine, irresponsible as some fine instrument untouched and wholly uninteresting as a poem unread.

That the cat is worthy of appreciation and esteem is very clearly proved if we trace her half-hidden history through several centuries of fluctuating fortunes from the days of ancient Egypt, where she was worshipped, down to our own times, in which authors, poets, painters, and Statesmen have delighted to do her honour.

There are numerous Cat Clubs and Specialists' Societies throughout the British Isles. The most recently formed is the Middlesex Cat Club, which intends

holding its first show at the Staines Town Hall on February 21st. Miss Frances Simpson has kindly consented to judge. There will be over thirty classes for long and short-haired cats, and a number of handsome special prizes have already been promised. All particulars can be obtained from Miss Beardsley, 3, Foster Road, Duke's Avenue, Chiswick.

Cage Birds.

ONE of the commonest errors in keeping caged birds for singing purposes is to limit them to the smallest space possible, under the mistaken idea that the more space a bird has to move about in, and thus help to distract its attention, the less time it will devote to song and the more time to mere gadding about, or, as it should rather be called, to healthful exercise. It is a wrong idea.

Song is the natural outcome of blithe content and happiness, which can only exist in a healthful body, and one that is at ease with itself, so to speak, and to insure these fundamental principles it is absolutely necessary that the subject shall always be able to take a fairly large amount of vigorous exercise. Probably few, if any, living creatures require more space in which to take exercise in proportion to size than birds, so that it must be at once apparent that at the very best a cage is not likely to overshoot the requirements. The regulation small singing cage is but a poor apology in which a bird may procure even the most trivial amount of exercise.

Therefore, if you would have your bird sing at its best and preserve its health for the longest period, give the wrong idea a wide berth and provide a fairly large cage for it, keep it in a bright and cheerful place, not stowed away near the ceiling of the room, where the air is often reeking and unwholesome, and feed it well and on a proper wholesome diet, according to its species, as we shall point out from time to time in the proper place.

WARNING TO THE DEAF.

In a recently published "Treatise on Deafness," there is a most interesting chapter, warning the reader of the "Insidious Nature of Deafness," which should be read by every deaf person. The author, an aural specialist, who has numbered his patients by thousands for years past, in plain words tells of the irreparable mischief caused by neglecting to arrest the progress of this distressing affliction, when once the symptoms appear.

According to this book, which deals also with the author's own discoveries, the causes of deafness and noises in the head are mostly related to conditions affecting the small bones and muscles hidden deeply within the ear. This is so thoroughly explained by interesting descriptions and illustrations, that the reader cannot fail to understand how useless must be the many methods of treatment so widely advertised. Given the cause the author has sought the means of removing it, and, as the result of his researches, recommends a common-sense method of self-treatment which anyone can apply at home. By special arrangement a copy of this book can be obtained post free by anyone naming this paper as reference. All communications should be addressed to Prof. G. Keith-Harvey (Room 689), 117, Holborn, London, E.C.— [ADVT.]

The Garden.

Conducted by **WILLIAM WATSON.**

Work for the Week.

Early Apples.

NOW that planting time is here and orchards and kitchen gardens are under judgment, a hint as to what apples are worth planting to replace sorts that are not satisfactory will no doubt be welcome.

Sorts that are not fit for use till October or later are numerous and generally grown, but the early sorts are comparatively rare. Apples in August and September are in great demand, but in how many towns can one find at that time an apple that is pleasant eating?

The best of the early sorts is Beauty of Bath, a free grower and a prolific bearer of good-looking shapely fruit, which are as good when baked in a pie as when eaten raw. Lady Sudeley is another August apple and in some parts of the country Worcester Pearmain is ready before August is out.

Irish Peach is an early dessert apple of the finest quality which we have gathered in perfection the first week in August.

In some districts it is the best of all summer apples, its rich flavour and juiciness being exceptional in an early sort. When ripe it is smooth, yellowish green with a large patch of red on the sunny side.

Margaret is another good early sort, and one of the oldest apples grown. It is ripe early in August but to enjoy the fruit it should be gathered a few days before it is ripe. It does not keep well.

The best early kitchen apples are Early Julyan, Summer Stillbert, a very popular sort in the west of England; Summer Golden Pippin, also known as White Summer Pippin, a delicious apple, but it only keeps about a fortnight; still it should be in every home orchard as it is a good cropper and its yellow and red fruits are at their best as a rule in mid-August. Keswick Codlin, Lord Suffield and Red Hawthornden are good standard sorts which come in early in September.

If only two sorts can be found room for they should be Beauty of Bath and Irish Peach; if there is room for two more we would select Worcester Pearmain and Summer Golden Pippin.

The sorts here named can all be obtained from a fruit-tree nurseryman. It is risky to buy them from dealers who have no reputation for care in keeping their trees true to name and in the use of suitable stocks for them.

Early Pears.

Pears are enjoyable only when they are caught on the top of their condition, to use a sporting expression. Many apples are good for weeks or even months after

they are ripe, but no pear will wait to be eaten more than about a week. In this respect pears resemble peaches and both resemble new-laid eggs, which cease to be new-laid after they are a week old.

The mid-season pears which ripen on the tree are most enjoyable when gathered from the tree when they are dead ripe. A fruit of Beurré Hardy in mid-October, taken ripe from the tree and eaten at about three in the afternoon is a great treat, and amply justifies the late Mr. R. D. Blackmore, an expert grower of pears,

Beurré Giffard, both good quality August pears, much alike in size and colour, but Fondante is the better in quality. Summer Rose is a first-rate early pear with a pleasant musky flavour and the tree invariably crops well.

Finally, there is the old Windsor Pear, not a champion, but a good useful sort which will grow in a backyard where the soil is chiefly brick-rubble and tin cans. Of course, it pays for good cultivation, but if anyone wishes to have a pear that will grow well in a town yard, flower beautifully in spring, bear a big crop of fruit that can be eaten and enjoyed in August, this is the pear for him. It is one of the oldest sorts known.



Photo.]

Winter Heliotrope.

[Rev. H. C. Walker.

This was introduced into English Gardens from Southern Europe over a century ago.

Winter Heliotrope.

A Charming Harbinger of Spring.

PETASITIS FRAGRANS was introduced from Southern Europe into English gardens over a century ago and for a time was grown in pots in the greenhouse. From this it got into the border outside but eventually escaped from garden bondage and established itself as an alien in the warmer parts of the country.

It grows along the Thames in abundance and we receive it now and then for name from various parts of the British Islands.

There is no more charming harbinger of spring. Its handsome cordate leaves reveal its close relationship with the common butter bur, and its pale purplish flowers, produced in February, are very fragrant, their odour resembling that of the Peruvian heliotrope.

The plant is worth a place in any garden, and it will grow in any out-of-the way corner. We have also used it in a conservatory, where it grew under a stage, gave no trouble, and in mid-winter its odour was most enjoyable. Once established it is as ineradicable as horseradish.

THE AMERICAN GOOSEBERRY MILDEW.

So much agitation has been occasioned in fruit-growing circles by the appearance of alarmist reports concerning this disease that it is gratifying to learn that the highest expert opinion pronounces the danger to be much exaggerated. The view held by this authority is that the disease is not likely to become widespread in this country, and that, at the worst, it will not prove to be difficult of control by spraying. It will be remembered that it was first contended that legislation should be enacted with a view to preventing the importation of this unwelcome stranger. It is, however, now an established fact that the American gooseberry mildew has long been present in England, and as during that time it has not increased noticeably, there would appear to be scant reason for alarm regarding it.

in his verdict that Beurré Hardy is one of the very finest and most highly bred of all pears. But it must be caught at its best, or the verdict may be against it.

Early pears of quality are few. There isn't one in August as good as a home grown Williams' Bon Chrétien in September. Still, there are several sorts that are worth growing for a supply of dessert pears in the dog days. Jargonelle we all know, or should, although it is usual for country folk to call all early pears, good and bad, Jargonelles.

The true pear of that name is large and shapely with a smooth yellow skin, tinged with dull red on one side. Its flesh is melting and juicy, white, rich in flavour and aroma and it is ripe in mid-August. Mr. Blackmore couldn't make anything of it at Teddington, yet it is one of the best natured and most prolific of trees.

Then we have Fondante de Cuerne and

The Garden.

The Heating of Small Greenhouses.

THE heating of plant houses and frames by artificial means has been greatly simplified in recent years. A century ago the flue, which was more or less a horizontal chimney extending through the house, was the universal method. Hot water pipes superseded this, and the furnace with boiler fed by a cistern and with pipes so arranged as to produce a steady circulation of the heated water from boiler to pipes and back again to boiler is now practically the only method in use.

For large structures this method answers very well. It is only when the structure is small that a simpler, less costly, and more easily adjusted arrangement is desirable. A small boiler with hot water pipes of the usual pattern requires far more attention than can be afforded; moreover, it is apt to get out of hand with disastrous results.

We are frequently asked to recommend some simple method for maintaining a given temperature in a small greenhouse, and we are glad to be able to place before our readers several simple contrivances which we know from experience will, with a little management, meet this need.

Bearing in mind that the requirements of plants with respect to warmth and fresh air are pretty much the same as those which are known to be most healthy for ourselves, there should be no difficulty in applying to the heating of a plant house those means which serve the purpose in a dwelling house.

Growing plants, however, require a more humid atmosphere than is considered to be good for man; at any rate, the air in a greenhouse generally should contain more moisture than that of a sitting-room. There need be no difficulty in controlling these three important factors, namely, heat, moisture, and ventilation. It is only when one or the other is allowed to get out of balance that harm to plants is the result.

Most mistakes are made by ignoring the fundamental principle; plants, like animals, breathe, and, like animals, they require a continuous supply of fresh air.

This can be given quite easily by a proper adjustment of ventilators. Ventilation is not the same thing as the regulation of temperature by means of open sashes, etc. An outlet in the top of the house, and an inlet at the bottom, such as sensible people have in their bedrooms, should be provided in every plant house.

We have now in the market numerous lamps, stoves, and heaters constructed to burn oil, or gas, which not only are excellent substitutes for the usual coal fire grate in rooms, but are equally excellent for heating plant houses. Some years ago the hot water apparatus in a large early vinery broke down during a severe frost, and to maintain a safe temperature in the house until the boiler was repaired a large number of wax candles were used.

In this simple manner frost was excluded, and no appreciable harm was done to the vines. On another occasion a similar difficulty was met by the use of a number of large oil lamps. Since then we have never hesitated to employ oil lamps

as a temporary expedient for heating large greenhouses.

Gas may be used in place of fuel for heating a small boiler that feeds hot water pipes laid in the usual way in a greenhouse. The advantages of gas over fuel are in its being well under control, and the supply constant. It is also, when properly fixed, much cheaper than fuel for heating small structures.

A good hot water boiler of this description is supplied by Messrs. C. Toope and Son, of Stepney Square, E. It is known as "The Champion," and is so constructed that every unit of heat is used up in warming the water, and the pipes are easily adjusted.

The heater itself may stand in a recess separate from the greenhouse, or in a house or shed adjoining, the pipes being connected through a hole in the wall. The price of this boiler, with 30 feet of 3-inch or 60 feet of 2-inch pipe is £2, a larger size to heat 140 feet of 3-inch pipe being £4. The same firm supply an oil lamp with boiler and pipes, known as the "John Bull." It is a perfectly safe, economical, and powerful heater, and can be fixed either inside or outside the greenhouse. A simple oil lamp with boiler for heating small houses, which will burn from 16 to 24 hours with one filling, is known as the "Little Gem," its price being 10s. There are no pipes with this except a small flue pipe.

Many people possess the ordinary radiator stoves such as are used for heating halls, bedrooms, etc. We have used one of these for a small greenhouse, and it was sufficient to maintain a temperature above freezing point throughout the winter. Ripplingille's Albion Lamp Company, of Aston Road, Birmingham, have a large selection of these lamps, the most suitable being those with a flat top, upon which a vessel containing water can be placed. With a little regulation this water can be made to give off sufficient vapour to keep the atmosphere in a suitably moist condition.

A very good lamp of this pattern is the "Small Palace"; it is fitted with a hundred candle power smokeless burner, its price being 15s. A larger size, with double the candle power, is supplied at 20s. Ripplingille's Albion Lamp Company also offer a circulating hot water apparatus, which is said to be well adapted for heating plant houses. It is a lamp of varying candle power, from 120 to 275, and from the boiler there are three pipes, four feet long, running horizontally to a standard. In these the hot water circulates, the whole becoming of uniform warmth. There is no appreciable smell, and when burning at its full power the smallest one will be sufficient for a greenhouse 25 feet long and of the usual proportions.

Finally, we would point out the necessity of utilising the sun's warmth at all times of the year for heating plant houses. It is surprising how much waste there is over the artificial heating of a glass-roofed structure.

The amateur gardener, overlooking the

effect of the sun, keeps his hot water apparatus going full steam on, the result often being that sun and pipes together raise the temperature to a degree which is most harmful to plant life, and should he happen to discover the excess of heat he endeavours to correct it by throwing open what he calls the ventilators. No plant, not even the thickest skinned, can stand this kind of treatment. Unfortunately the blame for the injury done is rarely attributed to the real cause.

Home-Raised Rhododendrons.

GOOD rhododendrons are expensive, and consequently it is only the wealthy who can afford to plant them in any quantity. Given a few good plants, however, it is quite easy to increase them from year to year by means of grafts on stocks of the common *R. ponticum*, this method being preferable to that of layering. In favourable localities seedlings suitable for stocks may be found growing around clumps of rhododendrons, good healthy plants about three years old being preferable. If stocks cannot be thus obtained they may be raised from seeds sown on the surface of a mixture of sand and peat, leaving them uncovered.

When watering, the pots should be stood up to the rim in a bucket of water, as the seeds are liable to be displaced if watered overhead. The best temperature for these pots is from 40 to 60 degrees. The stocks should be potted in a peaty soil, the most convenient sized pot being the three inch. They should be placed in a sheltered frame, but if this is not available they will not come to harm if left in the open. This month (February) is the time for grafting, and by potting the stocks in good time they become established and better able to withstand the weakening process of grafting.

The usual methods of grafting are saddle and side grafts, the former consisting of shaping the stock like a wedge and the scion to fit closely over it, and binding the joint firmly; whilst by the latter method a vertical cut is made to remove a piece from the side of the stock about an inch and a half in length, the scion being shaped to fit it. The former method is by far the best. By grafting as near the base of the stock as possible there is likely to be less trouble with suckers when the plants get old. Success must, however, always be looked after. The grafted plants should be kept in a warm frame or house until they are taken, when they require to be gradually hardened off.

Garden Queries Answered.

Dividing Yucca Plants.—The side shoots of *Yucca* may be taken off and treated as cuttings by planting them in sandy soil and placing them in a close frame or greenhouse. If in bottom heat so much the better. They also root in water, but this requires more care. The cutting should be fixed over a vessel of water such as a half gallon jar, and about three inches of the base should be in the water. This must be done in a warm greenhouse and if the water is kept sweet roots should be emitted from the base of the cutting in about six weeks.—To Mrs. J. P. GILLET, Banbury, Oxfordshire.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 91. VOL. 4.

FEBRUARY 9, 1907.

1d. WEEKLY.

Beautiful Shells.

By JAMES SCOTT. Illustrated from Drawings by the Author.

CONCHOLOGY is a weird and unattractive word to denote the fascinating science of shells. Merely in the form of a hobby the shells deserve collection on account of their imperishable beauty.

through the main orifice of their shells or through the latticed exterior, and these tentacles serve as prey-catchers, and also as legs enabling them to roam about in an awkward manner. Bear in mind that these streamers are not permanent features

—they are temporary extensions of the jelly body, made at the will of the animal, and may be one and all retracted entirely into the main mass.

—they are temporary extensions of the jelly body, made at the will of the animal, and may be one and all retracted entirely into the main mass.

The reproduction of many species of these curious beings is effected in a really extraordinary manner, a layer of jelly overspreading the shell and subsequently breaking up into myriads of invisible living things which swim about for a time, but ultimately settle down, each to form a pretty case resembling that of its parent. Other species adopt different methods.

I could give you the scientific names of those shown in No. 1, but what purpose would they serve? Let us try to fathom the mystery w h y s u c h

minute, rudimentary creatures have the power of extracting the lime, etc., from the water, and depositing it upon themselves so picturesquely.

Each separate member shown in No. 1 is a mere speck, yet magnify any of them, and then—well, everyone who *does* see them under such conditions marvels at the sight. Of course, in chalk they are crushed flat, as a rule; but sections of chalk, very thin, or of limestone—which is solidified chalk—reveal their outlines and interior structure very plainly.

Passing on to No. 2 illustration of natural-sized shells, I doubt whether any reader would care to be incommoded with great wealth if he had had to take it in loads of small shells. Yet the cowrie, a brightly polish-

ed shell of the kind depicted in the upper left-hand corner of No. 2 was once the sole currency employed by the natives of the West Indies and elsewhere, no doubt proving a discouragement to the acquisition of riches by the naked fellows without pockets.

A few explanatory words may be said concerning the process responsible for the highly pleasing gloss of their surfaces. The mantle of the animal (the equivalent to the fringe just inside an oyster or a scallop) habitually embraces the shell in a complete manner, and the result of the incessant action of that useful organ is to so level all particles as to permanently polish the surface.

Staircase shells are remarkable, in addition to their peculiar shape, for the extreme beauty and delicacy of their markings and colouring. Those in my possession are individually only about the diameter of half-an-inch, yet when seen through a hand lens reveal most conspicuously their elegance. One is shown at the top of No. 2. It will be noticed that the

(Continued on page 178.)

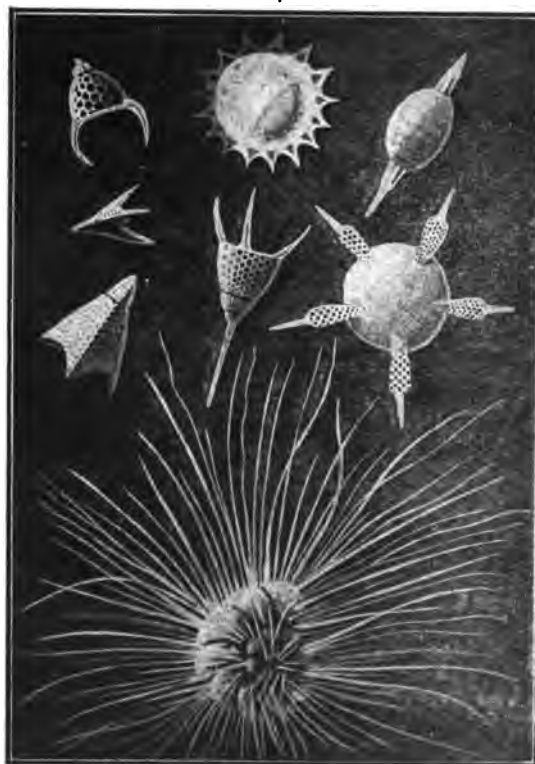


An interesting group of shells such as are described in the article.

Among the innumerable groups perhaps the most minute ones exhibit the most diversified range of really exquisite symmetry, yet these are usually screened from the eyes of all except microscopists. Apart from diatoms, which belong to the sphere of vegetation, the smallest shells in existence are those forming in bulk, as the residue of prehistoric life, the beds of chalk and its allied strata. The living descendants of these creatures are still abundant, though their number must be considered very insignificant compared with that occupying the oceans in remote times.

For simple beauty of a unique kind it would be difficult to surpass the varied designs of their shells, some of which are pictured in the first of my drawings. Hundreds of different patterns are to be found in any wealthy naturalist's collection, and there is no reason to suppose that all existing variations have yet been discovered.

In a living state the inmates of most of these shells possess the curious capability of protruding long streamers or filaments of their strange bodies either



A few magnified shells from among the many hundreds of different kinds of which chalk is composed. Each is occupied by a jelly-bodied animal which can protrude temporary tentacles through the chalk, as shown in the lower half of the drawing.

Country-Side Notes.

Warham, Norfolk.

"The hills purify those who walk on them."

RICHARD JEFFRIES.

"THE returning tide of bird-life already runs strongly, though we scarcely notice it, because the passing stream of birds which filters through our gardens, woods, and fields, whenever the south wind blows, consists as yet chiefly of familiar British birds, young birds of last year, who are gradually drifting northwards to their homes, as they drifted southwards in autumn. Then most of them were wearing their first dull plumage; now they are gorgeous in bridal array. Then they were wandering from their old nurseries to find a livelihood; now they are coming back to establish the new nurseries of another generation.

"As with the migrating birds, so with the opening flowers: we hardly notice the first to move because they are so common and familiar. Each early golden spray of gorse, however, commands attention always, and the primrose and periwinkle in the coppice are lovely; while the hazel's yellow catkins swing as banners of advancing spring more boldly day by day. But the botanist who tramps the country-side today and brings home grousel, chickweed, daisy, buttercup, dandelion, shepherd's purse, barren strawberry, whitlow grass, field speedwell, and so on, has not much to look at after all."—From *The Country Day by Day*, February 5th.

To carry out all the suggestions made by readers for the enlarged COUNTRY-SIDE would have filled a paper of 64 pages. This may come some day; but meanwhile we must cut our coat according to the cloth which we have at disposal. In the first enlarged number we were, however, able to carry out at least three of the suggestions which seemed to be especially desired. One of these was to introduce some new and interesting competitions, without which, it seems, readers feel that a popular paper is incomplete. The second was to give space to microscopy as a separate subject; and the third to devote a section to all classes of domestic pets, instead of poultry only as hitherto.

The fourth was that I should republish at the head of these notes one of the seasonable paragraphs which I used to write in the *Daily Mail*; and as those readers who possess "The Country Day by Day" in book form are comparatively few I have made the experiment above. Others of the new features suggested are under consideration; but—but—but where is the space for them to come from? Few readers, I imagine, can have any idea what a sad "massacre of the innocents" the production of each week's COUNTRY-SIDE involves.

A word of advice may be useful to some of the large number of readers who are proposing to put up nesting-boxes for the birds. In the first place, the nesting-boxes should be put up as soon as possible. The birds which nest in holes are among

those which nest early, because their nurseries are protected from the weather; and boxes which are put up now may have eggs in them in March. Secondly, do not put up the nest-boxes in the sort of places where, you may think, birds would like to have a cosy home, among the branches of a tree or bush or among the folds of a climbing plant. Such situations are pretty and may sometimes be occupied; but as a rule, the birds will refuse to have anything to do with them. The naked trunk of a tree or the middle of a bare expanse of a wall is the kind of situation which appeals to the birds, for the simple reason that it is safe from cats, rats, mice, and weasels, as well as from other stronger birds.

A nest-box placed in a bush or in a tree with branches to the ground will almost certainly be annexed or plundered by mice or, if occupied by birds, will be watched by cats or vermin with the result that the parent birds will be killed. Consider the safety of the nest from enemies of all kinds and you will be surprised how readily the birds will fall in with your scheme. As the practice of putting up these boxes spreads and as we learn the art of catering for the needs of other birds than those which naturally nest in holes, we shall be able gradually to convert the suburbs of our cities into paradises for birds, with the result that the slugs and snails and earwigs, etc., which are so grievous a scourge to those who love their town-gardens, will be brought into subjection, and it will no longer be necessary to go beyond Brixton or even Hyde Park to hear the nightingale or the cuckoo. And a few cuckoos in Hyde Park would have made short work of the "plague of caterpillars" last year.

In continuance of its useful scheme of encouraging nature study in country schools, the Country Live Stock Insurance Association, of Clifford Street, York, lately offered through the Education Committees of the Counties of Bucks and Leicestershire prizes for essays by children attending county schools on "Insects useful and injurious to agriculture" (Bucks) and "Noxious Weeds in this locality and how to get rid of them" (Leics.). In the latter county 331 essays were sent in, and Mr. John Hetherington, F.S.A.A., managing director of the Live Stock Insurance Association, has entrusted the work of adjudicating upon these to members of the B.E.N.A. in the county. This recognition of the public value and public spirit of the B.E.N.A. is very gratifying; and in the extended scheme of prize giving contemplated by Mr. Hetherington's Association in order to induce country children to take an interest in their surroundings, I am sure that the assistance of the B.E.N.A. can always be relied upon when needed.

The Rev. J. Ridley sends from Pulham Rectory, Dorset, an interesting contribution to the discussion of the question "How Birds Migrate." "In the days of long ago, in 1866," he writes, "there blew

the heaviest storm in Torbay that anyone could remember. From one point I counted the wrecks of 33 vessels, all driven on shore by a N.E. hurricane, keen and biting, and bringing some snow with it. That was on the night of January 10th and morning of the 11th. On the 12th I walked round the coast to the southward, and from the cliffs overlooking one of the many little bays I looked down on as calm and beautiful a sea as ever I saw. The sun shone brilliantly with almost summer heat. To complete the change from the winter of the day before two martins were sailing round and round below, between me and the sea. I watched them for a long time.

"Now, according to the migration with the wind theory they ought to have flown before that furious north-easter. Of course, there might have been preventing circumstances; and I should add that a strong S.W. wind had deluded those poor ill-fated ships into the bay a day or two before, and that the change was almost as violent and as sudden as a tornado. I am not against the theory, but before it is accepted such facts have to be considered. Those martins apparently had a splendid opportunity of being driven across the Channel, but they didn't go. It might have been that the wind was too rough for them, and they hid in that sheltered cove to wait for a less boisterous journey."

I think that there is a more simple explanation, however, which occurs to us naturally so soon as we get rid of the old idea that, when such birds as swallows are seen in Britain later than usual, they necessarily are belated, *i.e.*, making their journey southwards very late. The two martins which the Rev. J. Ridley saw in Torbay on January 12th, 1866—and many others doubtless which were to be seen on that day at other points of the neighbouring coast—were new arrivals. They had been travelling prematurely northwards from Africa with the same strong southerly winds which had brought the unlucky ships into the bay. They were checked, probably, on the fringe of the cold storm from the north, which wrecked the ships; but they came on again with the bright summer-like weather which followed.

It was evidently a period of remarkable weather disturbance; and, when we remember that a swift-flying bird travelling with the wind, could cover the distance from North Africa to Cornwall in one short winter's day, we can easily understand how these martins, starting on their mistaken journey in obedience to hot desert winds, should not have paused until they came almost within sight of the British coast where they were reared. Then, checked for a day by the blizzard, they would have crossed the Channel easily on the morning when they were seen. One need not wonder therefore why they did not depart when the cold north-easter blew, because their presence on the 12th did not necessarily imply that they were in Britain on the 10th. We cannot even be sure that they inevitably suffered for their error in returning to Britain in January;

for, as a mere matter of physical achievement, it would have been as easy for them to return to the south when another north wind blew, as it had been for them to come north with the hot south wind.

But here the interesting question arises whether the migrating instinct of birds can thus operate, first in one way and then in another, or whether the instinct to fly with the cold north wind belongs to one season and the desire to return with the south wind to another. In spring certainly swallows, martins, or swifts, which have arrived before a spell of cold weather sets in, die by thousands of starvation instead of returning; and one can understand that, in spite of such occasional sacrifices, it is better in the long run—and that is always what guides nature—that the instinct to migrate should be appropriate to the season, and not that the birds should shift backwards and forwards with changes of the weather. If it is so, then the appearances of swallows and other summer birds in December or January would mean that the spring impulse had come upon them too soon, and that they were doomed to suffer the full penalty of error in the wintry times still ahead.

This would certainly seem to be the case from the fact that both swallows and sandmartins were to be seen near Havant this winter from the middle of December onwards until January 10th, when only one sandmartin remained. If they were not possessed by the premature impulse of spring migration with the south wind only, it is surely improbable that they would have continued to linger during weeks in which cold north winds blew probably more than once. And it would be quite impossible to explain why they remained, on the old theory that birds have some mysterious instinct which guides them over sea and land. But if we realise that birds travel only when a certain wind blows in certain seasons, we can understand how they are occasionally misled to return to Britain even in mid-winter.

Under normal conditions their instinct to fly with a cold wind would be at rest by the beginning of November. After that they would gradually be grown ripe, so to speak, for returning with a south wind. But if, as happened throughout this half of the northern hemisphere apparently last year, November and December are so mild as to bring out the flowers of spring and to renew the fruits of summer, causing birds to sing and even in some cases to build nests and lay eggs, we can understand that the same impulse of spring may have brought the migratory impulse of some summer birds into premature activity.

This inherited habit of birds to travel with the winds in season explains why—in answer to the Hon. and Rev. E. Lyttelton, Eton College—they migrate across a piece of sea where scores are drowned each year. In the first instance, in spite of their instinct to fly before the wind—or, perhaps more correctly, simply to fly, the wind determining the direction of their flight—the birds are reluctant to lose sight of land. Therefore, so far as is possible without continually battling against the wind, they follow the line of any coast which they may have

reached. But this sooner or later brings them to a headland pointing south (I am speaking of the autumn migration), one side of which they skirt with the wind abeam. And while some birds are following the line of this headland (Beachy Head is a good example) from the western side, others follow it from the eastern side. Arrived at the extremity and already flung some distance to seaward, both parties have the same choice before them, either to beat their way back against the wind to the coast or let themselves go.

Now, all kinds of birds, when migrating, are instinctively gregarious, often travelling by choice in the company of their natural enemies, rather than have no company at all. For the idea that there is safety in numbers is one of nature's fundamental rules. We see an amusing illustration of it in human conduct, when trippers abroad congregate in flocks and men who will not speak to each other as neighbours at home greet each other with effusive delight when they chance to meet in a strange country. And the important influence which this gregarious instinct exercises upon migrating birds is that it makes it impossible for them to continue flying in the opposite direction to that in which other birds are travelling. After rounding a headland they cannot fly, not only against the wind, but also against the line which other birds are taking. So the inevitable result is that all-flying themselves out to sea before the wind together, and in twenty minutes they are flying over France.

The same thing happens, I am confident, with the birds which leave the Scandinavian headlands on their perilously long flight across the German Ocean, hurrying before the cold east wind which brings them to Britain. But our own birds have only narrow seas to cross. Disasters often occur, no doubt, especially when local adverse gales are blowing off the coasts to which the migrants are travelling. In the daytime, however, they can see the land and fight their way toward it. It is at night when the treacherous glare of the lighthouses dazzles them that they perish in myriads; but the instinct of migration was established long before men built lighthouses. Incidentally it may be noted that it is this natural habit of birds to skirt the coast and to "take off" in company from certain headlands in order to cross the Channel which has been mainly responsible for the mistaken idea of our naturalists that the birds are born with a sort of tourists' guide-book in their brains indicating the proper routes which they must follow each autumn and spring.

Referring back to another argument, the same valued correspondent asks whether the evidence in the case of rabbits and hares being "fascinated" by the weasel is not very strong. Undoubtedly it is, especially in the writings of naturalist-authors with a bias towards the picturesque. But equally strong evidence is available in the case of adders swallowing their young; and you could fill a locker with the affidavits of worthy seamen who have seen the sea-serpent. The fact is that the most honest observers, with a preconceived idea in their minds, cannot always help seeing things which

do not happen; but with regard to the rabbits and hares, supposed to be "fascinated" by weasels or stoats, a frequent explanation is that the attention of the human observer is first attracted to the tragedy either by the squealing or by the peculiar behaviour of the victim. In either case it is clear, I think, that the creature has already been bitten and, although it has temporarily succeeded by superior strength in shaking off the assailant, it is already half-paralysed and doomed.

Among our "Queries, Answers, and Correspondence" a reader, "E. P. T.," asks an interesting question, whether the unusual movement which he and others observed of earth-worms to the surface of the ground on January 19th and 20th at Bath, in spite of apparently unfavourable conditions above ground, could have been caused by slight terrestrial tremors in response to the Jamaica earthquake. It is quite possible that earth-tremors should drive the worms to the surface, although I have never noticed it myself nor heard that it was noticed by others during a fairly extensive experience of earthquakes in India. People are, however, usually thinking too much about other things while an earthquake is in progress to pay attention to worms.

The further fact noticed by "E. P. T.," however, that the birds would not touch the worms, scarcely bears out the earth-tremor theory; because we can hardly suppose that any sulphureous taste could have attached to them. On the other hand, everyone who has often watched thrushes or robins feeding on a lawn must have noticed how they will sometimes look askance at a plump worm which they have dragged out of the ground and leave it. Everyone must have noticed, too, that when the garden paths and other hard surfaces are littered with worms which have been driven from their burrows by heavy rain the birds seem not to eat them.

I can only suppose that the explanation of these facts is that the rejected worms are suffering from one of the parasitical diseases to which they are subject, and that the birds have an instinctive knowledge that in that state they are unwholesome. It is possible, therefore, that the worms whose exodus was noticed on January 19th and 20th at Bath may have been similarly affected; but it would be interesting to know exactly what causes should have driven them out on those days and whether this was noticed elsewhere.

E. May Robinson.

"Even Now."

Comes even now the bud upon the whin-bush
From its green sheath like drop of living
gold;
'Mid dew-swept grass the silver gleam of
daisies,
Scatter'd like stars o'er woodland way and
wold.
Comes with the morn the splendid song of
blackbird,
Where o'er pale snowdrops silver birches
fling
Their drifting shadows, 'mid the flute-like
message
Of hope triumphant and the coming spring.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

The British Kite's Hard Case.—Two pairs of British kites again took off their young last summer; but I fear that their prospects of ultimate survival are bad.—J. WALPOLE BOND.

Pony Eating Fish.—The other day I saw a tradesman's pony being presented by a fishmonger with a small fish which it ate with apparent relish.—H. R. DAVIDSON, Hillhead, Glasgow.

Rabbits in Hard Times.—Rabbits had a hard struggle for life here (Aboyne, Aberdeenshire) during the great blizzard near the end of December. They were compelled to peel for food growing hawthorns and oaks and broom and cherry and wild rose as well as branches that fell from pine trees. They even ate paling. Some died for want of proper food.—R. G.

The Song of the Rook.—The return of the easterly wind and drier air was hailed at sundown on January 17th by a subdued sylvan chorus of thrushes; and in the clear sunlight of the morning of the 18th a rook flew to the top of an oak and expressed its gratification by jerking its tail feathers apart with a rattling sound as when a fan is expanded during small talk at an evening party, adding thereto sundry bows and nods and caws.—A. H. SWINTON, Totnes, Devon. [The above is a very excellent description of the song of the rook in the early year; for the rook is, or imagines himself to be, a songster.—Ed.]

Are Blackbirds' Eggs Changing?—In nearly all books on birds we find the egg of the blackbird described as being "pale bluish green in ground colour, spotted and freckled with pale brown." On very nearly all the eggs of this species which I have examined during the past two years are light ash coloured or purple spots among the brown ones. Have these grey markings been merely overlooked by naturalists, or is the egg of the blackbird slowly changing? Perhaps some of your readers may be able to remember whether twenty years ago the egg of the blackbird possessed ashy markings among the grey or not.—"LONE HUNTER," Kilkenny.

Choked by a Fish.—A friend of mine while walking near the Windrush—a small river at Bourton-on-the-Water—picked up a bird he saw floating on the water, with a fish firmly fixed in its throat. To-day I got possession of the bird with the fish, and found out that it was a water-rail and the fish a miller's thumb. I note in Morris's "British Birds" that a similar instance has occurred. Is the bird at all rare?—HARRY COX, Stow-on-the-Wold. [The water-rail is not a common bird, but turns up in all sorts of places, in winter especially.—Ed.]

A Pretty Drawing-room Fungus.—May I draw the attention of readers of THE COUNTRY-SIDE to the very charming fungus, the scarlet Cup Moss (*Peziza coccinea*), which may be found to the end of February? This very beautiful fungus is somewhat uncommon, but its discovery well rewards the search. This year it appeared quite early in January. It grows in shady, damp places, well sheltered from the wind, on fallen and decaying sticks,

especially dead twigs of hazel. Sometimes it grows on sticks covered with earth, as if growing on the ground. It is very easy to carry home, as the sticks can be gathered in the hand without detaching the fungus; and when these sticks are laid in china bowls among damp moss, nothing can be more beautiful, and the cup-moss will live indoors for weeks.—J. G.

A Stranded Shark.—This illustration is reproduced from the photograph of a young shark found on the beach at Hornsea, East Yorkshire. It had apparently been washed ashore, and being unable to regain the water, had died of suffocation. In its mouth was a large stone which it had evidently picked up in its frenzy, and upon this being removed the fish began to bleed at the mouth and nostrils, thus proving, together with the state of the shark when found, that it had only been dead a short time. There were no marks of

Noises of Butterflies and Moths.—In the case of the Feathered Gothic, the noise may be a call-note for the female if it is really confined to the males. The squeak of the Death's Head Moth (reference to which originated this subject), which I have heard myself, is in all probability a call-note, when it occurs naturally, and for defensive purposes, when induced by outside pressure or irritation. The exact method of its production is not known, but by careful investigation and experiment it has been ascertained that the head alone is the seat of the sound, which is caused in some way by the expiration of air, either through the proboscis or through some special aperture. The squeak of the chrysalis is merely that of the moth within, and is only heard within a few days of emergence. The click of the caterpillar is produced by the scraping or snapping together of the jaws, and is no doubt for defensive purposes.—C. NICHOLSON, Chingford.

Mice Eating Cacti.—I have had a miniature greenhouse for over two years furnished with ten different sorts of cacti and succulents. The former, especially the opuntia, grew remarkably well, and formed three lobes (is that the term?), and I was proud of my success. For some time I noticed the edges were getting very notched, and I could not account for it. A mouse was the culprit, and one day the plant seemed to have been sucked dry, for I found it lying limp in the pot and I could not succeed in restoring it. A cereus had been attacked, but the spines prevented much injury being done. The gasteria suffered also; and during the last week all the young shoots and leaves in the centre have quite been destroyed, the older leaves, five in number, eaten and cut off. It had grown so large that I re-potted it and kept it in the window. A deep hole had been made to get at the roots I suppose. The same has happened to the roots of the aspidistra, which have been much gnawed by the little creature.—C. F. COOK, Regent Street, W.

"Do Birds Yawn?"—No definite answer has yet been given, I think. It seems to me to turn on the meaning of "yawn." Among mammals yawning is due to a feeling of drowsiness, dulness, or fatigue. Why not so in birds also? Gaping is common in birds; but whether this is really yawning is perhaps doubtful. The object of yawning is to inhale a greater quantity of air—preferably purer air—and it is a comparatively lengthy process. The gaping of birds (not the disease) is, on the contrary, scarcely more than just an opening and closing of the mouth. I have observed it in pet canaries and in wild sparrows at all times of the day. It generally accompanies preening of the plumage, and is often noticeable after a good supply of food has been taken. I have not observed it to be more frequent at roosting time, so do not think it identical with yawning.—C. NICHOLSON, Chingford.

"The Mystery of the Divining Rod."—It may interest readers to know that a similar method was used in the mining district of Cornwall when a new lode was being sought. I believe that a hazel rod was always used and that this practice was in vogue in the time of Queen Elizabeth.—J. A. BUSCK, Winchmore Hill.



Photo.]

A Suffocated Shark.

[J. B. Appleby.

This Shark, when found on the East Yorkshire Coast, where it was cast up, had a large stone in its jaws, which it had evidently seized in the agony of death.

violence such as there would have been had it been killed by the propeller of a steamer, or if it had been thrown overboard from a trawler. The length of the fish was between four and five feet long. It was probably a Greenland shark (*Loxomus coralus*) which occasionally strays to home waters.—J. E. APPLEBY, 153, Bean Street, Hull.

The Jackdaw's Mischief.—I remember an incident which, I think, may interest some of your numerous readers. When I was a boy of twelve I lived in the quaint old town of Cirencester, and one day a builder erected a ladder against the gable of a house near which lived a man who owned a very knowing jackdaw, always on the look-out for mischief. I commenced to climb but as I got higher I found it necessary to hold on with both hands, when, to my fright, I discovered that the wicked jackdaw was hovering over my head. I could see the gleam of his eyes as he circled around me; and then he suddenly alighted on my head, dug his claws into my cap, and flew away with it down the street, at last dropping it in the mud, whilst I got down as well as I could. The rascally bird all this time was making a great noise, and as the incident had been observed by the bystanders I was heartily laughed at.—OWEN GIBBONS, White House, Wordsley.

A Strange Friendship.—It is very seldom that we hear of such strange companions as a lamb and a cat, but our photograph shows a pair of animals who entertained a decided affection for each other. The lamb which had lost its mother had been reared with

The billet, however, is not a clean feeder. It is to be found in shoals around the mouths of sewers, where not another fish may be caught. The sport it affords is excellent, and many a hundred have I caught.—(Rev.) GEO. BURNETT, View Park, Rotherglen.



Photo.]

Strange Friends.

[H. Lasenby.

A cat and a lamb that became inseparable.

milk supplied in a bottle to which was fitted a large teat. After having been fed in this manner for a short time, the lamb spent a good deal of its time inside the farmhouse and thus began the friendship with the cat. Our photograph shows the animals in a favourite position, resting on the rug before the fire in the kitchen of the farmhouse. It was very amusing to see them occasionally at play, and they could often be seen drinking milk from the same saucer, whilst outside the house the animals frequently took walks together.—H. LAZENBY, York.

"Singing of Sparrows."—The noise referred to by Miss K. Spear, which she heard on the island in the Serpentine, and attributes to the so-called "singing of sparrows," arises from the swarms of starlings that roost there. The same thing occurs at the Whitehall end of St. James's Park. Long after dark the chattering sounds like the whistling of the wind through the trees. We have two or three starlings that come every day from about September till about July. I believe they nest under the tiles of a house at the corner of the street.—W. E. LEVETT, Northumberland Place, Bayswater.

Four-leaved Clover.—The particular superstition attached to four-leaved clover is that if picked secretly and kept privately for a year and a day the heart's desire of its possessor will be fulfilled. This is quaintly expressed in the following doggerel rhyme:—

Pluck four-leaved clover stealthily,
When passers by are none to see;
Bear thou it thence with privacy.
A full year guard it secretly,
And thou thy heart's desire shalt see.

—A. READER.

The Billet Fish in Scotland.—I was very much interested in your paragraph on the Billet in issue of January 5th, and have been surprised how many know little or nothing of the fish. No fish is better known in the north-east of Scotland, but it is there called the "Podlie." Its names according to its different stages of growth are: (1) "Prinkle"—this is its earliest stage when it is a perfect pest to rock-fishers; (2) "May-podlies," the next year's stage; (3), "Podlies"; (4), "Saithes," corresponding to the grilse stage of salmon; and (5), "Coals," the full-grown stage at which the billet is sold as coal-fish in the south. The billet is very numerous on the east coast of Scotland, but not nearly so numerous on the west coast. When smoked, the "podlie" is very agreeable to taste. The oil got from the full-grown fish is even more medicinal than that of its more famous neighbour, the cod.

Worms and Earthquake.—Has any one else noticed an unusual rising of earthworms to the surface? I observed this last Saturday and Sunday (January 19th and 20th). There was no rain to "drown them out," nor could they have been tempted by warmth above ground. I am inclined to attribute it to slight terrestrial disturbance, the more so that myself and two or three other people had for some days been suffering from what we called "earthquake headache," that is, giddiness and feeling "at sea" as soon as we tried to stand or walk. Is this peculiar to the volcanic soil of Bath? or have the shocks of Jamaica set Mother Earth in a tremble all over? Also, I want to know do birds consider worms that come up of themselves unwholesome? I expected to see a rush

to be the earliest bird; but no, these creatures were allowed to wriggle some paces and then succumb to the cold. And yet times are hard. To-day the birds "sit brooding in the snow," and are very thankful for potato jackets.—E. P. T., Lansdown, Bath.

A Good Example.—As an instance of the good work which can be done in the pursuit of nature study by and for working men in our cities, I quote the following from a letter of the hon. secretary of the Birmingham Field Naturalists' Club, which is a branch of the Alcock Street Early Morning Adult School in that city:—"We are rather fortunately placed as a field club in that we possess a large room which we have converted into a natural history museum possessing already a matter of twenty-two cases 24 inches by 20 made by our own members and containing specimens of lepidoptera, hymenoptera, diptera, coleoptera, etc. We have a typical collection of land and fresh water shells. An herbarium of over 300 of our local plants. Vivarium and breeding cages containing living specimens of larvæ of common insects. Each month we arrange a series of vases containing common plants in flower during that particular month. On another shelf there is arranged a series of cases showing the common insects to be found during that month. We have a students' garden of some 400 square yards, and this is already stocked with over a hundred specimens of our local flora. It is our intention to make our meetings as free from technical matter as possible. We meet every Sunday for practical observation in a lane within twenty minutes of our id. tram terminus." [The hon. secretary is Mr. H. Thompson, 68, Castleford Road, Sparkhill, Birmingham.]

"Regelation of Snow."—All substances, when compressed, are heated in accordance with an elementary law of thermodynamics; gases being more compressible, exhibit the phenomenon more markedly than in the case of solids and liquids, but the effect is there all the same. The effect of compression in increasing the temperature of gases is easily and markedly seen in the warm condition of a cycle pump after two or three minutes bout of vigorous inflation of a tyre. Now, when snow is compressed, first of all the air is squeezed out of the interstices between the crystals and the final pressure momentarily thaws those particles which feel its influence, and on the removal of the pressure those particles promptly freeze again, but now into a solid lump. When, however, the air is very cold (i.e., frosty), the pressure exerted by

hands is not sufficient to produce enough heat to thaw the snow and consequently, as school-boys find, the snow will not "bind."—"M."

"The Castor Oil Plant."—Is your correspondent, J. D. Dunn, sure that his "castor oil plant" is really a ricinus (*Palma Christi*)? The true castor oil plant is in this latitude a half hardy annual and flowers (if at all) the first year. A plant that is often confused with this—the aralia—and is generally sold by costers and nurseymen as castor oil plants, is quite hardy, at any rate in the south of England, and flowers after the second or third year, and I think this must be the plant your correspondent alludes to.—C. H. RUSSELL, Wimbledon.

The "Planting" Game.—Re the planting of electric bulbs, etc., COUNTRY-SIDE, page 85). I really must thank you for the happy idea of the fireside game of "planting." Recently we had a progressive whist party here, and in order to pair off the ladies and gentlemen for the interval we introduced this amusement, each gentleman reading a question from his scoring card and a lady finding the answer on hers. But the evening's great feat of planting occurred during the play when one of the ladies "planted down" on the table, amid groans from her two opponents, all the thirteen trumps which she had in her hand. I can't help remarking on this as the chances are several millions to one against such a hand occurring again.—FRANK SMITH, Buckingham Place, Brighton.

Trees' Foster-Parents.—A very interesting study might be made of the different ways in which trees manage to secure the protection of other trees in youth, generally—if not always—ruining their protectors in later life. Almost all the climbing plants come under this category; but it also includes many forest trees. This picture, for instance, shows how an ash-seed, carried by chance on its winged tail into a crevice between the roots of a beech-tree has succeeded in establishing itself, and will no doubt ultimately overshadow and suffocate its host. But the beech need not complain; for its seeds, carried by wood-pigeons, are often dropped in such numbers by the overgorged birds under the pine-trees on which they roost, that it is no uncommon experience to find a beech-wood growing where a quarter of a century ago there were only



Photo.]

[J. S. Sargison.

Beech and Ash.

The latter is growing through a hole in the former, near Tunbridge Wells.

pinus. Here we see how the beech may in turn succumb to the ash; and as the ash seems unable to hold its own against the oak—owing to the dropping of acorns by rooks and jays—we see how the forest growth of a district may change as the years pass.

Week's Wild Life in Pictures.

(See page 179.)

The charming little Tree-creeper—the common Ground Lichen—the Brittle Star—
Spring Usher Moths—Butcher's Broom—Lady's Tresses.

WE see more of the tree creeper (1) when the trees are leafless, because then its flight so easily attracts attention as it drops from a height in one tree to the bottom of the trunk of the next, and from that point begins to creep upwards, delicately probing each likely hiding-place for insects with its slender bill. It is a charming little bird, so fearless of human beings that you may watch it at work from within a few feet. It has a little song like "Tit, tit-titter-zee"; but in the winter you hear only its thin little call-note—a note so thin and shrill indeed that it cannot be heard by those whose ears are at all dull. The bird is brown above and silvery-white below.

2. The common ground lichen is abundant in woods among moss. It is leaden-brown above and whitish below, having a network of raised veins bearing hairs which attach themselves as air-roots to the dead leaves and other decaying vegetable matter, from which they absorb nourishment. This part of the plant lives like a fungus; while the upper leaf-like part lives like an alga or sea-weed; so that every lichen may be said to be made up of an alga and a fungus.

3. The Brittle Stars differ from the common starfish in having slender arms composed of many movable joints so that they wriggle about like centipedes. They break very easily, however—hence their name—and it is not always easy to find a perfect specimen. Sometimes they will break off all their five arms together, as if on purpose; and, like the tails of those lizards which have a similar power of breaking themselves, the severed arms continue to wriggle for some time.

4. The Spring Usher Moth is well-named, because we usually see it first during the spell of spring-like weather, which generally comes in February. It differs, however, from the moths of spring in having a wingless female after the fashion of winter moths; and our illustration of four males shows how widely these vary in their modest markings of brown and grey. They are found near oak trees, on the trunks of which the wingless females crawl and hide.

5. The Butcher's Broom, a stiff, prickly shrub, is as unlike a lily as well may be; but so is the asparagus plant, and both of them belong to the lily family. The illustration shows a spray of butcher's broom bearing the red berries which make the female plants or the separate female branches of a two-sexed plant so bright in winter. The inconspicuous female flowers, not shown in the illustration, may be found now, spread out flat in the middle of what look like the plants' spiny-leaves, though they are really flattened-out twigs. The berries shown in the picture are growing where last year's flowers were borne.

6. This picture of the little orchid-like plant known as Lady's Tresses is given to show how, even in winter, the botanist can identify many flowers that are to be in the coming summer and autumn. This

will be plain if you compare this illustration of the winter's state of the bee orchis and early spider orchis, given in the "Week's Wild Life" of December 22nd. The Lady's Tresses scarcely deserves so pretty a name, as it only bears in September a thin flower spike of tiny whitish flowers. They look interesting, however, because they are closely-packed in a single line along one side only of the spike. At the same time a new rosette of shiny green leaves, as in the picture, will be formed by the side of the flower-spike, to give way in turn to the flower-spike of the next year.

Additions to the Natural History Museum.

By R. Lydekker.

Head of a young Blesbok from South Africa—Hen Pheasant with plumage of a cock—Skull of "Royal Hampton"—North American Prairie Hare and Jack-rabbit.

PERHAPS the most interesting addition to the exhibited mammal series is the head of a young individual of that lovely South African antelope, the blesbok, this being displayed to the public in order to show the extraordinary difference between its face-markings and those of the adult.

The species takes its name from the presence of a broad white "blaze" down the face, forming, with the white ears, a most striking contrast to the purplish chestnut of the rest of the head. In the young, however, the "blaze" is black instead of white, which renders the general appearance so different that an immature individual has actually been described as representing a distinct species.

Not improbably the ancestral blesboks, like many other species of antelopes, had a black streak down the face; and this, for some special reason, has been changed in their descendants to white. How to account for the disappearance of the pigment in the hair of this part is, however, a matter of difficulty, as it is almost impossible to conceive that phagocytes should attack only certain special areas and then work to a definite pattern.

In the North Hall may be seen a hen pheasant, the gift of Mr. C. J. Heath, F.R.C.S., which has assumed many of the plumage characters normally characteristic of the cock. When the bird was dissected the ovaries were found to be diseased. Although the tail-feathers are normal, the head and neck have assumed the blue plumage of the cock.

This assumption of secondary male sexual character by barren females affords support to the theory that such characters

The enlargement of "The Country-Side" is permanent. Please introduce the Paper to your friends.

are largely due to the necessity of using up in the male proteids which in the female are normally required for reproductive purposes.

In the same saloon, although in another case, has been placed the skull of the late Sir J. Blundell Maple's celebrated thoroughbred stallion, "Royal Hampton," the gift of Mrs. Ballard (formerly Lady Maple).

Specimens of the North American prairie hare and "jack-rabbit" (an abbreviation of "jackass-rabbit," so named from the great length of its ears) have been added to the hare-case in the lower mammal gallery.

These rodents (which have the habits of hares rather than of rabbits) are of interest on account of the enormous profusion in which they occur in certain parts of the United States. When jack-rabbits become a perfect pest, regular drives are instituted, by which the rodents are rounded up into a "corral."

At the climax of the drive the screeching of the rabbits can be heard above everything, and the ground is covered with dead rabbits by the dozen. At the corral-entrance the scene is indescribably pitiful and distressing.

To slash and beat the poor screaming animals to death is the work of a short time, but it brings tears to many an eye, and makes the heart sore to witness the finish. It is a relief to everybody when all is still, when the trying day is at an end. The result of a drive at Fresno, California, in 1893, was 20,000 dead rabbits.

Beautiful Shells.

(Continued from page 173.)

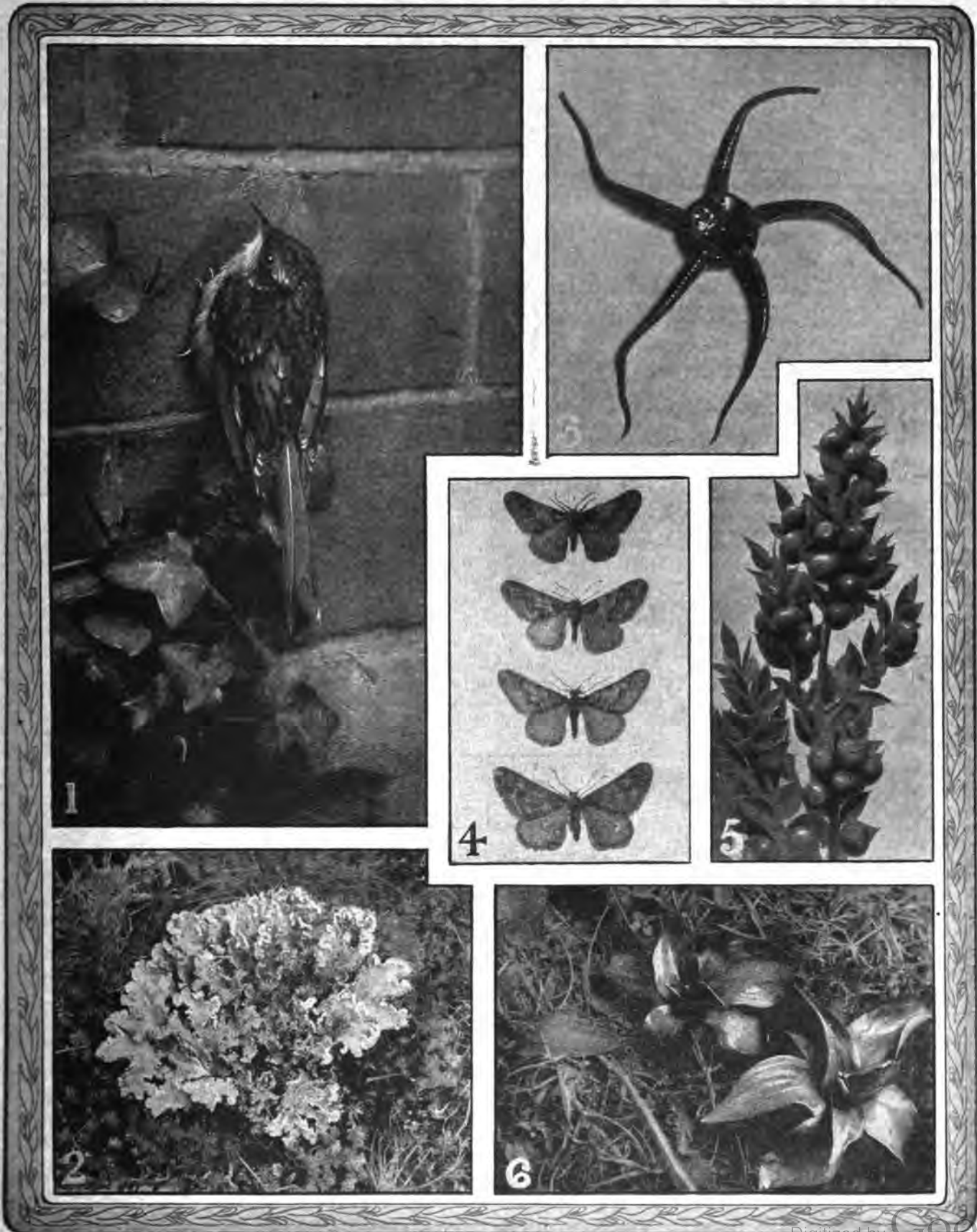
spirally disposed lines with their intermediate lighter markings, resembling steps, are remotely analogous to staircases. Although the brown upper surfaces of these shells have a great similarity to each other, the designs on the underside vary considerably, the commonest being a series of bright pink diamond spots circularly arranged on an ivory ground.

Basket shells, a sketch of one of which is provided in the lower portion of No. 2, enable us to readily understand the manner adopted by shell-fish in building up their normally imperishable cases. The outer, or free edge may be likened to a lip, and subsequent layers of lime are added thereto in order to increase the size of the shell. Each preceding rib, all of which stand out so bold and clear around the spire, corresponds with the completion of the shell for a certain season at varying anterior dates, and are termed periodic mouths. At first, of course, the animal is small, and can only construct a proportionately sized receptacle; but as its growth slowly increases the dimensions of its abode are adapted to its needs, the last opening, or mouth, always being larger than any of the others. This process accounts for the spiral formation of shells.

Among the commonest objects of the seaside are the small limpets, shaped like shallow ribbed tents, an example of which is given to the right of No. 2. Running diagonally across the central portion of No. 2 may be seen a specimen of the screw shells, a definition which is very obviously appropriate.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 178.)



1. Tree Creeper, *Certhia familiaris* (Miss C. J. Bacon). 2. Common Ground Lichen, *Telidema canna* (E. Connoid).
 3. Brittle Star, a species of Ophiuroid (R. Boakes). 4. Spring Usher Moth, *Hybernia leucophaea* (Copyright). 5. Butcher's Broom, *Ruscus aculeatus*, in Fruit (A. P. Macklin). 6. Lady's Tresses, *Spiranthes autumnalis* (G. Hodgson).

Questions worth Answering.

PRIZES FOR READERS.

WE are giving from week to week a number of interesting questions on all kinds of subjects in keeping with THE COUNTRY-SIDE. We invite readers to send in brief answers to these questions, and for the best answer received each week we shall award a prize of five shillings. Below are a number of questions that have reached us from various sources, and some have been answered to show the kind of replies that are wanted. Answers are invited to the six questions at the end. No reply should exceed one hundred words in length, but they may be less, and answers each week must reach us by the Monday following the publication of the paper. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C.

Is any individual animal protected by Act of Parliament on account of a useful service which it performs while living?

Yes, the New Zealand Legislature some time ago passed a measure prohibiting, under a penalty of £10, any interference with an old dolphin known as "Pelorus Jack." This animal acts as a most effective pilot of vessels going in and out of the French Pass, keeping invariably to the deep water.

Do many animals and birds get killed upon our railways?

Yes, the number must be very great. Some time ago a signalman employed near Workspod stated that he had picked up in the course of a year in the three or four miles of line which he controlled, one pigeon, one kestrel-hawk, two pheasants, four partridges, one common snipe, one jack snipe, innumerable small birds of all kinds, three cats, two foxes, two terriers, one foxhound, one collie, several hares, dozens of rabbits, scores of rats, and thousands of frogs. In the same period there were also a cow and a sheep killed on the same stretch of line.

Is anything known as to the rapidity with which insects vibrate their wings?

Lord Avebury has informed us that the common house fly vibrates its wings 20,100 times a minute, or 336 times a second; and the bee 26,400 times a minute or 440 times a second.

By what single feature may the different common gulls be distinguished?

By the colour of the feet. The herring and the lesser blackbacked, have flesh-coloured and yellow feet respectively; the common gull, which is of medium size, has greenish feet; the kittiwake has black feet; and the smallest, the blackheaded gull, has ruddy purple legs.

When was the last wolf killed in Britain?

It is sometimes stated that Sir E. Cameron despatched the last wolf in Britain in 1680; but so late as 1743 a wolf was killed in the region of the Findhorn in Morayshire, by a local inhabitant named McQueen.

Besides the rabbit in Australia has the introduction of an animal into a British Colony ever proved a great pest?

About twenty years ago the mongoose was introduced into Jamaica because it was thought that the creature would be useful in exterminating the rats on the sugar cane plantations. The experiment, however, was not successful, for enormous damage has been done to the domestic poultry and the ground game by the mongoose.

When was bull bating abolished in England?

In 1835, when a Bill was passed making this degrading form of sport illegal. Thirty-three years earlier, a Bill to this effect was introduced into the House of Commons, but was thrown out on its second reading.

Can you say where there is a Shakespearean garden in England, and exactly what does the phrase imply?

On her Essex estate the Countess of Warwick has a garden which includes every flower, shrub, and vegetable mentioned in the works of Shakespeare. The collection includes over two hundred species, each of which bears a label with the quotation from the play in which it was mentioned.

Are bears still found in other European countries, besides Russia?

The bear is still found in its wild state not only in Russia, but in the Pyrenees, in Scandinavia, Germany, and in Hungary. In Saxon times the bear was very common in England. During the reign of Edward the Confessor the town of Norwich had to furnish annually one bear to the King.

Which are the swiftest animals?

The best horse record for a mile is at the rate of nearly thirty-five miles an hour, but this is quite exceptional. The best speeds of various animals have been computed as follows:—First-class greyhound, thirty-four miles an hour; racehorse, thirty-two miles; prong-horned antelope, thirty miles; Texan jack-rabbit, twenty-eight miles; common fox, twenty-four miles; foxhound, twenty-two miles. Man's record speed is at the rate of fourteen miles an hour.

What is the cause of rain and hail storms?

Is there anywhere in the world a cave of marble?

Which is the most profitable of all nut bearing trees?

Which naturalist's experiment has probably proved most disastrous to a community?

Is it true that in the Arctic regions people more than a mile apart can converse comfortably?

Have cats ever been used largely in recent times to check the increase of any animals other than rats and mice?

A Mixed Bag.

The "Age" of Icebergs.—Two hundred years is a not at all uncommon age for the larger icebergs.

"Clothes" Moths.—There are at least three common species of "clothes moths" which destroy clothes and carpets, etc.

The "Maple."—The sycamore was known as the "maple" by the older botanists; and, of course, it is a kind of maple.

Added "Egg-Diet."—A certain species of leech is charitably credited with devouring the added eggs of the crayfish.

A Profitable Parsnip.—In a garden at Yardley, Northants, a parsnip was discovered with a gold ring firmly imbedded in it.

Rustic "Tatcho."—The ashes of the southern wood plant were formerly used as a hair-restorer when mixed with old salad-oil.

Chinese and Cormorants.—To prevent their trained cormorants from swallowing the fish they capture, the Chinese place a fairly tight ring round the birds' necks.

Touch v. Sight.—In the case of most deep-sea fishes which are supplied with defective eyesight, this is made up for by their having many extremely long and sensitive feelers.

Glow-worms and Storms.—It is a curious and unexplained fact that glow-worms always shine with a brighter light just before an approaching storm than at any other time.

The Diet of Worms.—The usual food of worms consists of decaying vegetable matter, but they will also readily devour animal foods, fat being especially attractive to them.

Pickled Flower Buds.—It is said that the flower buds of the common broom can be formed into an excellent pickle which is said to taste very much like capers.

A Daring Gull.—Mr. R. Barry Jones once saw a sea gull swoop at a salmon which he had caught and laid on the bank, and peck out its right eye, afterwards flying away with its prize.

Poison of the Yew.—A herd of valuable bullocks grazing in Houghton Park, near Dunstable, broke into a shrubbery and ate the leaves of the yew trees, with the result that seven were fatally poisoned.

A Respectable Cuckoo.—The crow-pheasant is in one way the most respectable of the cuckoo tribe, for it does not lay its eggs in the nests of other birds.

Africans and Owls.—African natives look upon the owl with feelings of dread, believing that a wound from its talons will never heal.

The "Tammie Norrie."—In the island of St. Kilda the puffin is known by the quaint title of "Tammie Norrie."

Birds' Nests in Evolution.—Mr. W. P. Pycraft has advanced a theory on the evolution question to the effect that formerly all birds nested in trees and that the first cause of their nesting on the ground was overcrowding. It was advanced in support of this theory that the oldest known fossil-bird, the archæopteryx, was a tree-nesting species.

Slaughter of Seals.—It has been computed that between the years 1790 and 1830 between sixteen and seventeen million fur seals were killed on the sealing grounds south of the equator alone.

Neck and Neck.—The giraffe has the same number of bone-joints in the neck as the porpoise, although the latter seems to have no neck at all, and the former appears to be "all neck."—E. A. Brooksbank.

Adders in Scotland.—When, some years ago, some sixty acres of Lochar Moss in Dumfries were reclaimed no fewer than 24,000 adders were killed, showing an average of 40 per acre.

Sociable Owls.—An easy way for those who like owls about the ground to gratify their desire is said to be by keeping a pair of owls in a cage, when others will be sure to be near at hand.

A Strange Case.—In September of last year a curious case of foster-mothering was noticed at Ludbrook, a sow with a litter of pigs taking to a calf.—J. W. Worsley.

The Giant of the Solar System.

By NORMAN LATTEY.

NEARLY overhead during the evenings of this month flares a bright star-like object. This is Jupiter, the largest of the sun's brilliant retinue, and two and a half times greater in bulk than all his planetary *confreres* put together.

Though his prodigious globe is 86,000 miles in diameter, *i.e.*, ten times greater than that of the earth, his rotation period occupies barely twelve hours—less than half ours.

The shape of Jupiter is very far from round; in fact, it is almost oval, indicating a semi-plastic body spinning on its axis at such a terrific speed as to cause a considerable bulging in the equatorial regions with, of course, a corresponding flattening at the poles.

The spectacle of the belted planet, half sun, half world as he appears through a large telescope, flanked by his four principal moons, is superbly impressive, his shining disc crossed horizontally by dusky bands from pole to pole.

Even through a small instrument the two main girdles at once attract attention, and at one period a few years ago the wonderful "Red Spot" was a remarkable feature, having been conspicuously in evidence for twenty years.

Several times it has faded almost to invisibility, but each time some inexplicable resuscitating force rescued it from total extinction. Of recent years, however, it has been gradually fading and is now very faint.

The nature of this extraordinary object remains a mystery. From its apparent stability and appearance of being surrounded by streams of rushing lava-like fluid—for Jupiter has evidently by no means cooled down sufficiently to be enclosed in a firm crust—the great red spot was assumed to be a solid excrescence rising above the glowing atmosphere of metallic vapours surrounding the actual globe.

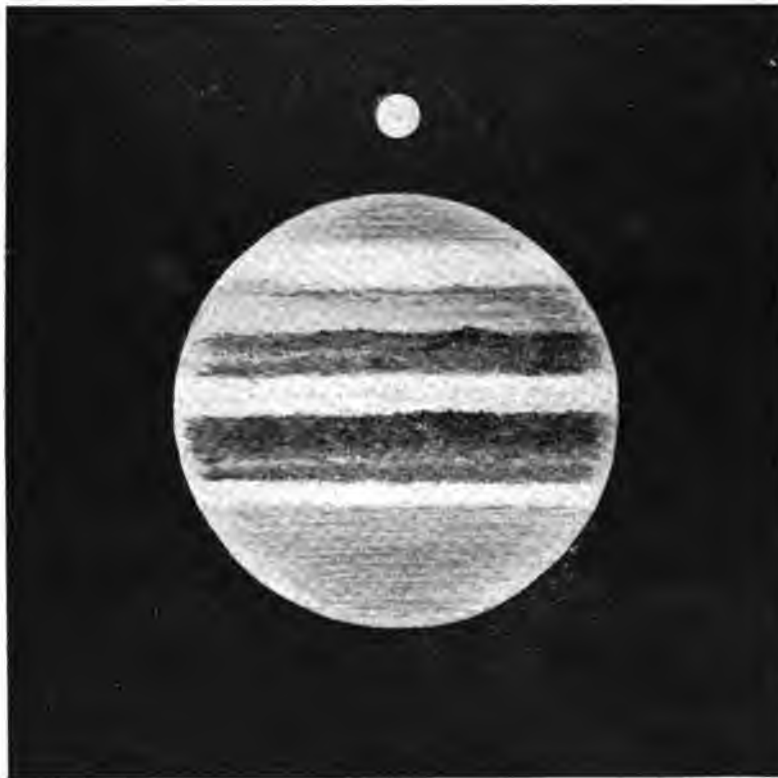
A striking demonstration was afforded in 1891, when a small dark spot was observed floating slowly along the strings of incandescence blocked by the great red spot.

It was many months approaching the latter, and the outcome of the collision was watched with intense interest. At last the impact took place with a somewhat unexpected result. The smaller spot instead of being arrested in its progress endeavoured to coast round the larger one and was dashed to pieces like a drifting wreck on a rock-bound coast.

The great red spot measures 30,000 miles in length by 7,000 miles in width, and curiously enough seems to have shifted its position westward about 11,000 miles since last spring.

Some idea of the present aspect of Jupiter may be gathered from the accompanying sketch made recently by the writer by means of a large telescope. Needless to say it is beyond human power to portray the delicate wispy markings and lustrous shimmer which the instrument revealed under high magnifying powers.

After Galileo's discovery of the four largest moons in 1610, Jupiter was supposed to possess no others, but in 1892 a fifth was detected at the Lick Observatory in California.



The Planet Jupiter

As seen through a large telescope. The small disc represents the relative size of the earth.

Sir Robert Ball, the Irish astronomer, however, predicted the existence of more, and in 1905 a sixth was found photographically with a seventh a month later. The three last are exceedingly faint and their births were probably not unconnected with the disruption of some of the minor members of the family of thirty-two comets attached to the Jovian system.

The transit or passage across the face of Jupiter of one of the larger satellites is a remarkable sight. The glittering point of light approaches the shining disc without exhibiting any sign of the impending change which it is about to undergo.

Then it seems to touch the edge, and for a minute or two hangs like a pearl against the blackness. The next instant it is transformed into a spot of jet projected on a luminous background. Slowly

it travels along, a perfectly round speck, making for the opposite side.

Presently another, but not so intensely black counterpart, appears on the scene following behind. This is the satellite's shadow which insists on accompanying its more material leader on its journey. Imperceptibly the former gains on the latter until they seem identical; then the shadow begins to forge ahead, and increasing the lead passes off the disc in front.

The whole effect is due to a certain relative position of the sun, earth and Jupiter, and at other periods when these are altered the order is reversed. Sometimes also the Satellites are eclipsed in the mighty cone of shadow lost by Jupiter in space, or disappear behind the disc instead of passing in front.

The distance of Jupiter from the sun averages 483 million miles and the planet occupies nearly

twelve years in completing a circuit. In other words, its "annual" period is twelve times as long as ours, and so would be the seasons were it not that owing to the uprightness of its axis in regard to its path in space none are possible.

Owing also to the partial self-luminosity of the globe absolute darkness is probably non-existent to the Jovians, if there be any. On this point, however, even speculation must be silent for the present, since what we see is in all likelihood merely a cloud envelope of superheated gases through which no instrument yet known to science can penetrate.

A Mature Opinion.—Mr. S. Yeates, West View, Cowfold, Sussex, writes that during seventy years of study of wild life (he will be eighty next September) he has never known so pleasantly instructive a paper as THE COUNTRY-SIDE has been to him.

Message from West Wales.—"We are quite a considerable band of COUNTRY-SIDE readers here in Western Wales drawn together by our common love of the doctrines which the dear little nature paper teaches. May it go on from strength to strength!"—G. H. ROSSANT, Pembroke Dock, S. Wales.

From a Reader.

Rosedale, Thorncroft Road,
Sutton, Surrey.

GENTLEMEN,—
Jan. 23rd, 1907.

I quite intended writing this morning to advise you of the return of the Slides "Wild Life Series," but unfortunately I omitted to do so. The slides were sent by post early this morning, and you should have them now. The slides are beautifully got up, and were instrumental in making my lecture last evening very successful. I thank you for sending them so early.—I remain, yours sincerely, D. WILLOTT.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, FEBRUARY 9, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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Sea-Birds of Cork and Kerry.

By MAUD E. SARGENT.

THE extreme South-western corner of Ireland, where the Atlantic winds and waves have rent the coast into fantastically-shaped cliffs, rocks, and islets, is the haunt of myriads of sea-birds, some of whom are decidedly rare in other parts of the British Isles.

The only Irish nesting-stations of the gannet, or solan-goose, are the Little Skelligs, off the Kerry coast, and the curious rocks named the "Bull," "Cow," and "Calf," off Dursey Head, to the west of Bantry Bay, in the Co. Cork. This fine, but noisy, and, according to sailors and fishermen, very stupid bird, has only one colony in England—Lundy Island—but it nests on the Bass Rock, and Ailsa Crag in Scotland, and is abundant on St. Kilda.

The name of "booby gannet" seems to have arisen from the fact that it will allow itself to be handled on the nest, or knocked down with a stick, rather than forsake the eggs or young, and also because the birds were formerly caught by fastening a fish on a board, which was floated on the water, when the gannets, attracted by the sight as they sailed overhead, swooped down upon the board from a great height, often breaking their necks or bills against the wood.

This custom is not quite extinct even yet, and the birds are also frequently entangled in the meshes of nets when a shoal of herring, mackerel, or some other surface-swimming fish, on which the gannets chiefly feed, visits the coast. Then the poor "boobies," hovering far above, dash down with great force upon the fish, catching feet or heads in the net, and probably having their necks wrung by the angry fishermen.

The birds are remarkable for their powers of vision. The Cork fisher-folks describe a keen-sighted person as having "the eye of a gannet." In former days the peasantry of Kerry used to eat these and other sea-birds on fast-days, thinking from the fishy flavour that they were not to be considered as meat!

On the summit of the gigantic rocks and cliffs, the fierce great, black-backed gull or "horse-gull," as he is called here, makes his nest, and is not a pleasant neighbour to other creatures. He is a terrible egg thief, and will attack and kill sick or wounded birds, first blinding them, then pecking them to death.

Young rabbits often fall a victim to him, and the country-folks declare that he will kill weakly lambs and attack drowning men, and often carries off chickens or young ducks when he wanders up the estuaries, when the nesting-season is over. In spite of these enormities, it is often tamed and kept as a pet along the coast. In the South of England, this fine bird is known as "the cob."

The lesser black-backed gull is not so common on this coast, but it has been known to build on the Sovereign Islands, near Kinsale, and on the grassy slopes of many rocky islets to the westward. The predatory gull is very numerous here, and

nests in similar situations, being fond of hollows among tufts of sea-pinks, popularly known as "our lady's cushions."

The black-headed gull breeds in bogs and grassy isles in many of the loughs that run inland from this coast. In winter the birds come down to the estuaries in large numbers. They may be seen promenading on the quays in Cork and Queens-town quite regardless of the traffic, as they search greedily for food, uttering the shrill note, which has gained them the title of "laughing gulls."

The common gull is very numerous in winter, when it may be seen feeding in the fields with the rooks, or on the shore with the hooded crows, which are known here as "squall-crows," or "scald-crows," and are a perfect pest to poultry and game-keepers. In Ireland they take the place of the carrion crow, which is only an occasional visitor.

The pretty kittiwakes have large colonies on the Bull and Cow rocks, and similar places where they fill the air with their cries of "kittiwake! kittiwake!" The common, little, and Arctic tern all nest in grassy islands along this coast, especially in Bantry Bay. The graceful shape, gray and white plumage, black heads, forked tails, and bright red feet and bills, combine to render these "sea-swallows" beautiful birds. The rare black tern sometimes visits us in autumn. Occasional winter visitors are the Iceland gull and the ferocious, glaucous gull, known as "the Burgomaster" or "Ring-master," from his habit of bullying and chasing the other sea-birds.

Two species of skuas also appear in autumn, but they are not common, and the same may be said of the great crested grebe; though the little grebe, or dab-chick is to be seen all the year, round lakes and estuaries.

The guillemots, called "murras" in Cork, are very common, vast numbers nest with the razor-bills and puffins on the rocks and islands of Kerry and on many parts of the Cork coast, such as the Bull and Cow rocks, the "Stags" off Castlehaven, and in the high cliffs of the Old Head of Kinsale, where gulls, rock-pigeons, and countless other birds make their homes. The single, large, handsome egg is laid on the bare ledges of the rocks, where the pretty black and white birds sit in long rows.

The comical-looking puffin, or "sea-parrot," with its plumage of grey, white, and black, and its enormous red and yellow beak, which looks as if it were signed for a sort of bird-clown, is common in summer, when it lays in holes among the rocks, or in rabbit-burrows, sometimes turning out the proper owners in most unceremonious fashion.

The ceaseless persecution of shepherds and gamekeepers have driven the raven from its inland haunts; it seems to nest only along the most unfrequented part of the coast.

The very handsome great northern diver is a fairly common autumn and winter visitor to this part of Ireland, where it is often called "the loon." I have seen it more than once myself in late August, and fancy that it follows the shoals of herrings or the small "harvest mackerel" to these shores from its Northern home. The much smaller "red-throated diver" is common in winter.

The "black divers," often mentioned by fishermen, are the common black cormorants, which have large colonies on the ledges of many cliffs and on the top of the Cow rock, but wander far inland in winter up the rivers. Last year I frequently saw a large one seated on a rock in the river Lee, about a mile above Cork, on the look-out for fish.

The shags, or green cormorants, never go inland. They build in dark caverns and fissures in the cliffs, where they twist about their long necks in snaky fashion, and croak angrily at intruders, but can rarely be hunted out of their hiding-place.

When the autumn gales commence, or large shoals of bait visit these shores, the stormy petrels, or "Mother Cary's chickens," hated by sailors, appear close to land. They nest underground, like the puffins and shearwaters, in the Skelligs, Blasquets, and other Kerry isles. The sea for many a mile round is simply alive with birds, and at night the weird cries of the dusky shearwaters, who have emerged from their burrows, echo across the waves.

Many of the islands are tenanted by a pair of peregrine falcons, who rear their young on the bare ledges of cliffs, and devour quantities of gulls, plover, curlew, puffins, and rabbits.

In winter flocks of teal, widgeon, wild duck, pintails, and sometimes Brent geese arrive on these shores. In severe seasons the lag goose and the white-fronted goose appear, but in Galway, Mayo, and Donegal, these birds are frequent visitors.

Snakes as Pets.

By FRANK FINN.

ALTHOUGH many people feel a repulsion for snakes, others are as much interested in them as in other animals, and would willingly keep and study these wonderful creatures—vertebrates with the form of worms, whose name they shared in old English.

We have a fairly good subject for snake-

as in other animals, the great thing is to be quiet and avoid flurry; and they should not be absolutely taken hold of if this can be avoided, but gently supported and allowed to twine about the hand.

Accommodation for a pet snake is not difficult to arrange, it being remembered that the creature needs access to sunlight or shade, and a sufficiently large bath to immerse itself completely. An enclosure in a sunny sheltered spot in the garden, with a wall of metal or other smooth surface, too high for the snakes to climb, could be easily fitted up for snake requirements; it would need a netting top to keep out intruders, a flower-pan sunk in the earth for bathing, and a heap of litter for the snakes to hide and hibernate in.

An indoor cage should have the sides of glass, any perforated material used for admitting ventilation being at the top, so that the snake cannot rub its muzzle against it. The floor should be covered with turf or pebbles, and the bath sunk flush with the surface of this. Turf must be thrown away when withered and dirty, but pebbles can easily be washed under running water and then replaced.

For food a common snake needs frogs or small fish, which latter must, of course, be given in the bath; very small specimens should have tadpoles and mealworms and other insects offered to them. The food should be alive, as, even more than most reptiles, snakes insist on seeing anything move before they take it as food. Care should be taken never to handle or disturb a snake just after a meal, as this will make it disgorge.

When kept in a warm room, a snake will be active all the winter; but this is

not desirable, as depriving the reptile's system of its natural period of rest. It is best, therefore, when autumn comes on to remove the snake to a cold room, but one out of the reach of frost, and, giving it extra litter, allow it to retire from view naturally till the spring.



Photo.]

[F. Graves.

An Interesting Pet for a Lady.

culture in our common English grass-snake, although this species has one serious drawback in its habit of exuding a vile-smelling secretion when handled.

This, however, it ceases to do when it becomes tame and feels confidence in its owner.

It has also the good quality of not actually biting, although it can show a mouth enough to frighten anyone, as the illustration shows, and this is somewhat of a concession, for a good many species of non-venomous snakes are very free biters.

In handling snakes,



Photo.]

[F. Graves.

The correct way of handling a Ringed Snake.

Snakes in a garden enclosure can, of course, be left to manage this matter for themselves, care being taken to see that the litter allowed them is sufficient in amount to allow them to penetrate beyond the power of frost.

The ringed snake in a wild state lays a large number of eggs depositing them often in a manure heap or amongst a mass of garden rubbish, sometimes in a hole in the wall of an outbuilding or ruins. It has been calculated that the average number of eggs is about thirty; and one would expect to find the snakes more frequently than one does. Perhaps many eggs get destroyed by farmers turning over their rubbish, and again, these snakes glide

away very quickly and probably pass unnoticed. The eggs are laid in late spring and hatched in the autumn as a rule. In captivity it is not often one finds them breeding, however.

There is one drawback to keeping these reptiles as pets, and that is their peculiar tendency to develop the dread disease canker. This is most difficult to eradicate.



Photo.]

[F. Graves.

The Ringed Snake.

It may be tamed and taught to have confidence in its owner.

The Microscope.

THESE are few objects that are more deservedly popular with the microscopist than the extremity of the proboscis of the blow-fly.

The photograph shown was taken under a microscope with a magnification of 50 diameters, and, perfect though the picture is, it falls a long way short of presenting the minute delicacy of structure that a peep at the original provides.

Look at the picture through an ordinary pocket lens. You will see the curious form of the *pseudo-trachea*, those rib-like channels that extend from extremities to centre; the title of these originated in the idea—since exploded—that their functions had connection



Photo.]

[A. H. Williams.

Extremity of the proboscis of a blow-fly.

with the respiration of the creature. Subsequent investigation has proved that they have to do with its feeding, that they are suctorial in their character instead of respiratory; they are really a series of minute arches, the extremities of which can be closed at will. Your lens will show the terminations of the upper of these into the two large trunks, whilst those of the lower end in the teeth, those forked processes near the dark muscle in the centre.

The larger hairs can be seen by the unaided eye, but the lens will show the myriads of exceedingly minute hairs, with which the principal part of the membrane composing the structure is studded.

The dark bands that extend across the organ are muscles for the closing of the sides together.

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Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on the back page) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Hedge-sparrow's Song.—No, it is not unusual to hear this so early as January 1st, in a favourable year; though the bird is often silent for several weeks in mid-winter.—(to A. W. B.)

Immigrant Woodpigeons.—Yes, immense flocks of woodpigeons come over to us from Scandinavia and north-eastern Europe for the winter. They spread over the country and do a terrible amount of injury to the farmer.—(to J. R. LANGMAID.)

Blackbirds' Winter Flight.—I think that the reason why blackbirds in late winter seem to dodge about among the bushes in the morning, flying more swiftly than at other seasons, is that they are pairing and chasing rivals away.—(to G. E. JOHNSON.)

"Marked Birds."—Yes, it is probable that the variously-coloured sparrows—one nearly white, one with buff wings, one mottled, and one with pale collar—are all members of the same family. For seven years now a similar family, varying from year to year, has bred about my house.—(to A. M. WHYTE.)

Differences in London Gulls.—The larger individuals among the flocks of London gulls are "herring gulls"; but the differences in the head-colouring of the smaller gulls do not indicate difference of kind. They are all "black-headed gulls," and many of them are showing distinct signs of the dark hoods which they will bear in summer.—(to W. E. LEVETT.)

Return of the Birds.—Undoubtedly instinct plays a strong part in the return of the birds to the very spot where they nested or were reared last year. But this only becomes effective when they have been carried by the wind within sight of remembered landmarks; though to their "bird's-eye view" from aloft a hundred miles between landmarks might be nothing.—(to K. B. BRACKENBURY.)

Dead Chaffinch.—It would be impossible to say what the bird died of without a *post-mortem*. The external appearance suggested a fit of some kind as the immediate cause. The lump over the eye was a tumour, which could easily have been removed by a medical man, or anyone possessing a little skill and anatomical knowledge. You give no idea how the bird was fed, and this knowledge would probably have given the key to a more definite cause of death.—(W. COLLOP, Hornsey.)

Jacobin's Eyes Affected.—I really do not know whether astigmatism has been recognised among birds, but I see no reason why it should not affect them just the same as humans. However, your bird's actions may perhaps be due to a simpler cause. Many jacobins, particularly those of good quality whose heads are smothered in the mass of feathers forming what is called the "hood and chain," have their vision more or less obscured. These birds naturally acquire a habit of groping their way about, and often go through strange antics in endeavouring to see over or beyond the obstructing feathers.—(to M. PIRKIS, Redcliffe Square, S.W.)

Nesting Boxes.—The sooner you put up nesting-boxes now the better.—(to G. W. GILLESPIE.)

Gait of Thrushes.—No, I do not think that song thrushes even run, but always hop.—(to J. R. HARDING.)

"Strange Captures."—It is not very unusual for a wren or robin to be caught in a wire rat-trap.—(to R. W. PETHEN.)

Eggs of Game.—Of course, it is illegal to take the eggs of game birds except on ground of which you own the shooting rights.—(to G. W. GILLESPIE.)

Black Sparrow.—Black sparrows are very rare; but I have no doubt that the "beautiful little bird with the black and glossy plumage of a blackbird" which fed regularly with the sparrows was one.—(to F. M. HEWITT.)

Water Snakes.—Snakes always swim with only their head above water. The one which your son saw near Poona was most probably one of the harmless, brown water snakes so common in India.—(to Rev. H. M. CHURCH, Edinburgh.)

Rearing Wild Rabbit.—There is not much difficulty in rearing a wild rabbit that is taken from the nest, and taming it. Wild rabbits caught at any age and given their liberty in a yard where they can dig, will live, but will never become tame.—(to W. HOWARTH.)

Keeping a Butterfly.—Yes, butterflies can be kept alive for a long time, and will become tame, if fed on moistened sugar, brown preferred. As your butterfly appears to like sitting on the damp moss in the corner of his box, this is probably an addition to its comfort. Butterflies are often aroused to activity in winter by unusual or accidental warmth reaching them in their sleeping places.—(to E. HODGETTS.)

How Peewits Live.—Of course it is not true that peewits live "by suction." What could they suck out of the ground except water? They live upon worms, etc., and are very clever at hearing them move near the surface and pulling them out. In hard frosts they go on short commons, being only able to obtain food when the mud flats or sand flats of the nearest tidal river or sea coast are uncovered at low tide.—(to H. YOUNG, Leytonstone.)

Abundance of Starlings.—There is probably a double reason for the appearance of large numbers of starlings in your garden this winter for the first time. Firstly, starlings have been multiplying steadily for many years, owing to good breeding seasons and mild winters; so that they are overcrowded and have to find new feeding-places. Secondly, there has been, this year, for the first time for some years, a spell of snowy weather which reduced the starlings to sore straits.—(to W. D. ARMSTRONG.)

Where "The Country-Side" Goes.—"All good wishes" writes Mr. R. Kearton, the famous nature-photographer, who, I regret to know, has suffered much lately from influenza, "to you and THE COUNTRY-SIDE, which I meet in a great number of unexpected corners of the earth."

From a Friend.—"As for THE COUNTRY-SIDE I feel that mere words are quite inadequate to express my appreciation of its value. I now subscribe for two copies, one of which goes to our village schoolmaster and from him to his boys, and the other to a missionary nephew and his wife in India."—Mrs. JARVIS BARBER, Hathersage.

Live Stock for Profit and Pleasure.

POULTRY.

On the Farm—Composition of Foods—Winter Hints.

Poultry on the Farm.

A GREAT deal of controversy, I find, exists with regard to the benefit or harm which poultry are supposed to do to pastures connected with our farms.

If a large number exist on a small acreage, the land is worth nothing for grazing, therefore the rent is chargeable to poultry, but when poultry are scattered over a large area—as they should be—say, 40 fowls to the acre, not only is the food bill correspondingly lessened, but the grass grown as the result, in my experience, more than compensates for the consumption of grass by the fowls, which cattle would otherwise have eaten. Many of our farmers allow cattle and horses to graze at the same time as poultry, although I do not commend the plan.

After harvest or any crops, in fact, colonies of fowls are placed on the land for four or six weeks. It is astonishing the grain they pick up, and the number of worms and insects per acre must be considerably lessened, to the benefit of the land and the invigoration of the fowls, especially when I learn that 50,000 earth worms are to be found in each acre of ordinary farm land.

Of course, large moveable houses on wheels are placed on the land, which is moved from week to week to fresh ground, all fowls being securely locked up each night, whilst a capital device to keep off intruders is to place a stout wire across the fields, along which a good watch dog can slide his chain, giving all the appearance of freedom as he paces up and down.

Winter Notes.

During the wintry weather fowls should not be allowed to run in the snow, which is the worst thing for poultry from which fertile eggs are expected.

It is very advisable to oil or grease the combs of all Mediterranean breeds, such as Minorcas, Leghorns, Andalusians, etc., before allowing them out in frosty weather, which will do much to prevent the head adornment getting frost-bitten, when fowls often lose a spike. When such trouble happens the comb should be well rubbed with snow or cold water for some few minutes, and then chaffed with the hands until the circulation has returned, after which apply vaseline or sweet oil.

In most breeds, heavy varieties especially, the breeding pens are filled with properly mated birds and demand every attention so that fertility may be assured. The male bird or stock cock should be removed from the pen at feeding times, and fed by himself, for in his anxiety for the welfare of his mates or wives, he often shares badly himself, and it follows that if the lord of the harem is in poor condition unfertile eggs will be the result.

In feeding, the meal (Spratt's is best) should be mixed with boiling water, and may be seasoned with a sprinkling of Colman's mustard on very cold or wet mornings; a little cooked meat is also

beneficial. If broody hens are obtainable they may be set, selecting the fattest, as fat means heat. Make the nest on the ground, but with good thick hay.

If incubators are used, care should be taken to see that the legs stand firm, and that it is free from vibration. The best temperature to work it during the early winter months is 105 to 106 degrees. See that all eggs are clean and free from dirt. It is well to carefully wash them in warm water.

Composition of Foods.

Common sense is an all-important factor in the feeding of profitable poultry, for let a man have ever so good a knowledge of the chemical composition of foodstuffs but lack common sense, he will make a failure of poultry feeding.

An observant individual with a modicum of common sense can get along without the chemical analysis, but he will certainly have greater success if he gives a little of his attention to the study of the composition of the foods he is using. There is in Chanticleer's opinion no set ration which can be given at all times and under all conditions; it must of necessity be altered according to the different conditions under which fowls are kept.

The purpose for which they are required, show, table, or eggs, their general health and condition, the climate, season of year, and the relative prices of food have all to be taken into consideration.

For fowls which are comfortably housed and quartered the nutritive ratio of the food, more especially for laying hens, should be 1 to 4, that is, food that averages one part of protein (muscle or flesh forming compounds) to four parts carbohydrates or nitrogen extracts (heat or fat producing compounds).

All food must be, of course, palatable, and such that it will be eaten with a relish, and here let me again point out that the up-to-date poultry keeper must never be too lavish in the feeding of his birds, which will surely cause the stock to become lethargic, and instead of being active, healthy, and filling the egg basket, will quickly put on unnecessary fat and prove to be useless denizens of the poultry yard. Fowls more often suffer from the sins of commission than of omission. Variety is charming and the following table will prove an excellent one:—

Food.	Water.	Ash.	Fibre.	Protein.	Carbo-hydr's or Nitrogen Free Extr't	Fat.
Wheat...	10.5	1.8	1.8	11.9	71.9	2.1
Oats...	11.0	3.0	9.5	11.8	59.7	5.0
Maize...	10.6	1.5	2.2	10.3	70.4	5.0
Barley...	10.9	2.4	2.7	12.4	69.8	1.8
Rye...	11.6	1.9	1.7	10.6	72.5	1.7
Rice...	12.4	.4	.2	7.4	79.2	.4
Buck Wheat	12.6	2.0	8.7	10.9	64.5	2.2
Maize Meal..	15.0	1.4	1.9	9.2	68.7	3.8
Oatmeal...	7.9	2.0	.9	14.7	67.4	7.1
Barley Meal	11.9	2.6	6.5	10.5	66.3	2.2
Pea Meal...	10.5	2.6	14.4	20.2	51.1	1.2
Bran...	11.9	5.8	9.0	15.4	53.9	4.0
Sharps...	12.1	3.3	4.6	15.6	60.4	4.0
Linseed Meal	10.1	3.8	9.5	33.2	35.4	7.9
Potatoes...	78.9	1.0	.6	2.1	17.3	0.1

If a careful selection be made from the above, a well-balanced food for all seasons of the year and for all breeds of poultry

can be easily arranged, which will prove of decided advantage to the fowls and profit to the owner.

Miscellaneous.

Supplementing my recent winter notes, let me advise a warm, comfortable, but well-ventilated night house, with good nest boxes to encourage layers.

In regard to water, it is advisable to give all poultry one good drink daily of hot water; this will invariably suffice, and be much appreciated. In the breeding pens a little citrate of iron may be added with good results.

There are many poultry tonics on the market just now, but I know of none better than a few drops of Parrish's food or sulphate of iron for invigorating the fowls.

DOGS.

The Irish Water Spaniel—Unrecognised Shows—Liability for Bites—Influenza—Various Notes.

The Irish Water Spaniels.

THE President of the Sporting Irish Water Spaniel Club, Lady Dunleath, claims through the doggy press that her club is the only one actually working for the breed. Her Ladyship says: "We desire, above all things, to improve and make known the usefulness of the Irish Water Spaniel as a practical sporting dog, and as President I may say we much desire the co-operation of all who have this object at heart." The annual subscription of the club is half a guinea. The Society is guaranteeing and securing classes at shows all over the United Kingdom for this much neglected variety.

Unrecognised Shows.

The Scottish Kennel Club are very wrath against the system adopted by certain Agricultural Societies of running unrecognised shows (shows at which dogs registered at the Kennel Club cannot compete). The action of the latter may certainly be detrimental to the owners of distinguished prize dogs, but it does the service of permitting the novice dog owner to exhibit a dog under extremely fair and equal conditions, and such gatherings should become very useful as recruiting grounds for "recognised" exhibitions, so the Scottish Kennel Club should take heart and let well alone. As for itself it has a bank balance of £1,100, and is quite prosperous. Outside certain recognised fixtures, bulldogs will in future only have allotted to them some twenty championship certificates, a decision of the authorities which should enhance the value of the award and importance of the honour. Hitherto the coveted crown has been too easily acquired, and one might almost say allowed by amicable arrangement between certain exhibitors who kept dogs at home while their friends' kennel had a look in and vice versa.

Liability for Bites.

In the recent appeal of Mrs. Phillips against the decision of the County Court Judge on her action against Mr. and

Mrs. Paterson for damages for the bite of one of their collies who attacked her while she was fitting a dress upon Mrs. Paterson, Mr. Justice Darling and Mr. Phillimore confirmed the County Court's decision which was: "that before a person can recover for the bite of a dog, two things must be proved, *viz.*, ferocity on the part of the dog, and knowledge on the part of the owner that his dog possessed this propensity." Mr. Justice Darling further agreed that a dog bite inflicted as the result of annoyance did not indicate ferocity.

Influenza.

Influenza is invariably a scourge of the kennel this time of year, and the following receipt may therefore find favour with those who see signs of its coming. Take equal parts of cod liver oil, syrup of buckthorn, syrup of pue, and syrup of garlic, and give one teaspoonful twice a day to big dogs, and once a day to little ones while the cold is present.

Various Notes.

The Midland Railway Company had judgment given against them last week for £300 damages for the death of a prize dog which was burnt to death travelling from Neath for Chesterfield, through the negligence of the Company's servants.

The great dog event of Manchester is fixed for March 19th to 21st, and among the judges already appointed are the following popular experts: Mr. T. W. Wilmot (sheepdogs), Mr. J. W. Crane (Dandie Dinmonts), Mr. T. Dalton (St. Bernards), Mr. T. Wallace (Smooth Collies), Mr. C. Hodges (Newfoundlands), Mr. T. Charteris (Scottish Terriers), Mr. A. J. Thorpe (Mastiffs).

The Kennel Club Meeting for Pointers and Setters takes place on April 17th, and following days at Orwell Park, Ipswich.

Entries for the K.C. Field Trial Derby have closed with an entry of seventy-two puppies.

This week Mr. Frank Van Neck is giving a Variety Star Matinee in aid of the National Defence League at the Duchess Palace Music Hall, Balham.

The Irish Kennel Club will probably hold their show on May 30th and 31st.

The Malton Dog Show is announced for June 28th and 29th, and that of Cork for July 3rd and 4th.

Cats.

CAT fanciers who followed with interest the recent libel case in which the veteran judge of cats, Mr. T. B. Mason, was sued by an exhibitor, and was ordered to pay £50 and costs (which may amount to over £400) will be interested to learn that a fund to assist Mr. Mason has been started, and subscriptions will be received by his colleague, Miss Frances Simpson, 9, Leonard Place, Kensington.

Miss Whitney, of Dublin, who is well-known as a very enthusiastic fancier of brown tabbies, is starting a specialist club for this rather neglected breed of long-haired cats.

At the Cat Show to be held at Staines on February 21st Miss Frances Simpson and Mr. T. B. Mason will be the judges.

Show this page to your friends who love dogs, cats and birds. Notes on these pets now form a regular feature of the "Country-Side."

CAGE BIRDS.

Necessity of Healthy Conditions—Position of the Cage—Temperature—Patterns of Cages.

Necessity of Healthy Conditions.

WE have already pointed out the necessity of keeping caged birds in perfect health and condition if they are to be a real source of pleasure to the owner, and also that one of the first essentials toward this end is a good, roomy cage. Next, proper attention to cleanliness and hygiene principle generally are of paramount importance, not only as regards the cage itself, but in all its surroundings and appurtenances, and in all food and drink given to the occupants.

The position in which the cage is kept is of vital importance. A very great proportion of cage pets suffer greatly in health and condition simply from the cage being continually hung in an unfavourable position.

Position of the Cage.

Very often it is placed high up near the ceiling to safeguard the bird from the too close attentions of the family cat. In this case one gains the first object, but at a dear cost. The air in this position is invariably the most foul and unhealthy in any room or enclosed space, and the light is almost as often quite as bad, so that two of the most vital principles of health are practically forfeited at once. Sooner or later, and it is generally sooner, a bird kept in such a position will become an anæmic physical wreck, gasping and wheezing at every turn—a misery to itself and a perplexing eyesore to its owner.

Then there is the bird whose misfortune is to be suspended in a pretty ornamental open wire cage in a window. His case is about as bad as the dismal existence of his brother near the ceiling. The one gets far too little sunshine and fresh, pure air, and the other gets if not too much of both at least a faulty rendering of them. Pure air the bird in the window may have, but the piercing draughts of keen, cold air that usually invade the window space are a constant danger to the bird's health.

Temperature.

Similarly the extremes of temperature to be endured are not at all conducive to health or longevity. Given a fairly sunny day, and the glaring rays of the sun intensified by the glass may send the temperature up into the hundreds. Then at night, only a few hours later, and when the bird is at rest, and, consequently, less able to resist the effects of cold than when hopping briskly about, the temperature may be verging on the "freezing point." It is, therefore, little wonder that the bird's health breaks down under these conditions.

Patterns of Cages.

As regards the pattern of cages, there is a general consensus of opinion in favour of the box type, as it is called, *i.e.*, with a solid wooden back, top, bottom, and both ends, leaving only the front to be wired. The reasons for the preference shown for this style of cage are undoubtedly good and sound. They are warmer and cosier, help to protect the bird from draughts, and ensure more privacy and seclusion for shy and nervous specimens.

Albeit, the air in them is scarcely likely to be as fresh as in a more open cage, and their snugness may, in warm or close weather, quickly be changed into an unwholesome "stiffness." Given certain conditions I have a predilection for a more open type of cage—at least, one that is wired in front and at the two ends.

These given conditions should be fairly obvious. They consist of a position in a room, or, better still, a room itself, which is as free as possible from draughts and cold currents of air, and that a very wild or shy bird should either be kept for a time in a box cage or have its cage partly covered over, until it has got over some of its nervousness.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

SOLAR HALO at 3.30 p.m., January 23rd, after fall of snow, followed by intense cold and brilliant sunshine, at Bagnor, Co. Down.—(C. N. F.)

UNUSUAL SKY on January 25th in Lanarkshire. There was a red sky in the morning, followed by another red sky in the afternoon. This is unusual.—(A. D. McN.)

RABBITS, three young ones, about a month old, January 16th, Lanark.—(A. D. McNair.)

GOLDEN EAGLES: A pair have appeared on an Upper Deeside Moss; but keepers will almost surely kill these.—(Seton P. Gordon.)

GREY PHALAROPES, SOOTY TERNS, BLACK TERN, KENTISH PLOVERS, all seen on September 2nd.—(J. Walpole Bond.) [This record has been held back, and the locality suppressed, lest collectors should "secure" the "specimens."—Ed.]

GREAT GREY SHRIKE shot near Chelmsford in mid-December.—(F. M. H.)

LITTLE OWL found shot near Billington, Beds., on January 10th.—(B.E.N.A., 1776.)

LITTLE AUKS: Seven near shore, January 7th; RED-THROATED DIVER: Full-plumaged male, January 13th; LONG-TAILED and GOLDEN-EYE DUCKS, January 20th, in rough sea, Stonehaven.—(A. D. H.)

WHITE-FRONTED GOOSE: Two seen at Rhoson-Sea, N. Wales, January 23rd.—(H. Miles-Fowler.)

SISKINS seen in pairs at Aboyne, Aberdeenshire, during the very severe weather about January 23rd.—(R. Graham.)

PBBWITS arrived in Torquay, January 26th, probably driven from the moors by cold weather.—(F. Price.)

BATHING IN SNOW.—Several readers report observing blackbirds bathing in the snow with great vigour during the severe weather.

Birds' Early Song.

BLACKBIRD: There can be no doubt whatever that during this winter the blackbirds were singing in November, December, and January. In response to my request for the evidence of observers who both saw and heard the songsters, so that there could be no mistake, I have received a large number of letters from different parts of the country from readers who did so.—(E. K. R.) CHAFFINCH: January 20th, at Sidmouth.—(Hon. and Rev. E. Lytelton.) CORN BUNTING: During severe frost, January 23rd; also heard in November at Aboyne, Aberdeenshire.—(Seton P. Gordon.) GREAT TIT: January 15th, at Aboyne, Aberdeenshire.—(Seton P. Gordon); January 21st, Torquay.—(F. Price.)

Early Nests.

WOODPIGIONS building January 12th, near Witham, Essex.—(F. M. H.) ROOKS reported building between January 9th and 23rd from many parts of England. HOUSE SPARROW: Nest with two eggs, January 21st, at Stoke Gabriel, Devon.—(W. J. W.) SONG THRUSH: Nest with two eggs, January 21st, at Stoke Gabriel, Devon.—(W. J. W.)

Marked Birds.

BLACKBIRD with right wing perfectly white, Edenbridge, Kent, January 23rd (W. V. Hanley); white on head, breast, and wings, January 26th, at Winchcomb, Glos.—(R. A. Rossborough.) ROBIN with right wing pure white and tail partly white, at Honiton, Devon.—(W. A. Hussey.)

London Notes.

STARLINGS, LARK, and two SONG THRUSHES feeding in the playground of the Thomas Street School, Limehouse, E., January 24th.—(C. Watson.) COAL TIT in Kensington Gardens, January 23rd, during bitter east wind.—(T. W. H. Burne.) BLACK SWANS nesting by the Long Water, Kensington Gardens; one egg on January 22nd.—(E. H. Lawrie.) POCHARD: About a dozen on Higham Park Lake, January 22nd; very near London for these ducks (J. H. Sheldon); one shot at Blindley Heath, Surrey, January 22nd; very rare in that district.—(P. G. Lane.)

Amateur Photography.

Bird's Nesting with a Camera.

By STANLEY C. JOHNSON, M.A.

WE live in an enlightened age where to begin experimenting—it cannot be anything but approximate. For the very people who, half a dozen years ago, considered it great sport to go bird's nesting now prefer the more humane pastime of photographing their quondam prey and, let it be added, they usually take great care to see that their movements do not cause unnecessary pain or fear to the tiny subjects they may chance upon.

A few hints on how to set to work will no doubt be of use to many. In the first place, far more imperative than a special kind of camera, an expensive lens, or a particular brand of plate, is the need for a humane spirit; without it this particular kind of work should be rigidly shunned and all idea of attempting it given up.

It is a very difficult matter to get on single handed, so at least one friend should be pressed into the service. Very often it will be desirable to climb a tree, scale a wall or crawl into a thicket, and the friend will be exceptionally useful to hand the apparatus up after the point of vantage has been gained. His services will also be of value in holding back a branch, in shading the nest and so on.

The hand camera will be the only practical apparatus for work of this nature. The stand variety would, of course, allow of sharper focussing and better centering, etc., but as there would often be no place for fixing the tripod, we are forced to forego its use.

Unless the reader is particularly enthusiastic he must be contented with the quarter-plate size; larger dimensions will frequently offer insuperable difficulties. The camera must have a focussing board on which a table of distances is given. It is a good plan to verify these measurements somewhere in the open before commencing serious work, as the cheaper forms of apparatus have, at times, been known to carry untrustworthy scales.

A knowledge of judging short distances should be possessed, and some means of measuring, as a sixty inch tape or a foot rule ought always to be carried.

It is better to work with dark slides than to depend upon some mechanical form of plate changing, as the latter is very apt to go wrong after the camera has suffered a little rough hoisting and lowering up and down trees.

Work may be successfully undertaken with any of the usual lenses, but if a special one is selected let it be of short focus. More often than not the nearness of side branches and leaves will necessitate the recourse to stopping down. Do not overdo this however. Only just get these objects into focus, for it must always be remembered that the smaller the aperture the longer the exposure.

Rapid plates should be used. For subjects discovered in the open, try a five seconds exposure with $f/11$; for nests in thickets or anywhere shaded give one minute at $f/12$. This data is merely suggested so that the novice may form some idea as to

In developing, aim at securing as much detail as possible; there will be none to lose in studies of this character. Dilute, therefore, the developer with an equal volume of water and keep the dish covered.



Photos.]

[S. C. Johnson]

Two good examples of Nest Photographs.

A wild duck's nest in the sedge on the edge of a pond; and a mallard's nest in a pollard willow tree.

No arranging of the nest should ever be attempted. Some writers suggest the wholesale clipping off of the neighbouring twigs and branches, but as the ends show plainly in the photographs and remind one somewhat of a stubble field, it is much wiser to bend offending matter out of the field of view and only as a last resource take to clipping. Lastly, never try to work on windy days; it is hopeless.

As to where and how to find suitable nests, their peculiarities, etc., the best guide will be the pages of THE COUNTRY-SIDE, and to them the reader is referred.

Flood Pictures.

By F. J. Erskine.

THE consensus of opinion is that February is a month of more or less damp description. Though this is disagreeable from some points, it is well known that land flooded is more essentially pictorial than when it is in any other condition.

Care must be exercised when flood pictures are to be secured. To take a great stretch of water gives only a flat and uninteresting picture. Mid-day is the worst time to take such pictures, as the position of the sun gives no striking relief to help matters, and then the clouds are hardly as good as in the early morning or the late afternoon. At either of these times the sun is low on the horizon, and the great masses of passing cloud are illuminated obliquely, with the result that a good cloudscape can easily be obtained to fill in the upper part of the plate with beneficial results to the picture.

To take a wide expanse of flood water is not easy, and if it can be managed it is best to have a contrasting feature in the near foreground. An animal is best, if such can be found, but in floods as a rule there is a notable absence of objects to break the monotony animate or inanimate. So, failing other objects, it is best to choose a breezy day when great broken clouds are drifting across the sun leaving patches of light in the sky and on the surface of the water.

The best and most pictorial results are had when the exposure is made directly facing the sun. To prevent halation, the plate should be a backed one. The subject being one in pure monochrome, it is not necessary to use an isochromatic screen, especially if the exposure is—as is generally the case—a short one. There is no colour to correct, and the addition of even a three times screen has a tendency to cause harshness. If an isochromatic plate is used it will secure the cloud forms alone without the assistance of a screen.

It is best to get the picture when the disc of the sun is hidden behind the edge of a cloud. At times the beautiful rayed effect can be most happily secured in seasons of flood, when at other moments it is almost impossible. The exposure, using F8 and a rapid plate, should not be more than 1-10th of a second. Too short an exposure leads to harsh contrasts, and the formation of patches of density where the rays of light strike the water.

In the same way the development must be conducted with an eye to these same patches of white deposit. As in flower studies, no bromide of potassium should be used, and the picture should be flashed out with a warmed developer containing a preponderance of alkali. The ideal flood negative is one which is rather thin and full of detail.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

B.E.N.A. Announcements.—Members who have copies of the B.E.N.A. List should take note of the additional names of members willing to identify specimens, act as local secretaries, etc., etc., as they are published. These can be entered as marginal notes on the printed lists in order to keep the latter up to date, until the next list is published.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

SPECIAL ADVANTAGE FOR MEMBERS.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—Amount previously acknowledged, £14 14s. 1d. Since received: 5s., John Hetherington, F.S.A.A., York. Total, £14 19s. 1d.

Public Utility of the B.E.N.A.—Among the "Country-Side Notes" in this issue, members will find notice of the encouraging use which has been made of the B.E.N.A. in Leicestershire, in adjudging the prizes offered by the County Livestock Association of York, for the encouragement of nature study.

Advantages for Members.—As the Spring is approaching all the advantages which have been offered to members of the identification of specimens, free distributions, local information, exchanges, etc., etc., and published from time to time in THE COUNTRY-SIDE, will shortly be reprinted in pamphlet form. The price will be as nominal as possible, governed only by the printer's bill and the cost of postage, with a narrow margin to ensure the B.E.N.A. against loss. The pamphlet

will be one which no member should go without; for there is no member to whom the aid of fellow members will not sometimes, during the season, be useful.

Second List of Members.—In answer to inquiries this cannot be put in hand until the supply of the first list has been exhausted. Will those who have not applied for copies of the first list help us by doing so now?

Affiliated Societies.

BIRMINGHAM FIELD NATURALISTS' CLUB.—This club, by a unanimous vote, has applied to be, and is hereby, affiliated to the B.E.N.A. It is an energetic club carried on for the benefit of genuine workmen. The hon. secretary is Mr. Herbert Thompson, 68, Castleford Road, Sparkhill, Birmingham. B.E.N.A. members in the neighbourhood who would like to join or help the club should communicate with him.

Local Secretaries.—The undermentioned member is willing to act as local hon. secretary for the district stated, and will be pleased to hear from local members who will co-operate in forming an active branch:—

NORTH MANCHESTER, including Blackley, Rhodes, Moston, Harpurney, and Crumpsall: Mr. Ben Wilde, 17, Princess Road, Hr. Crumpsall, Manchester.

To Local Secretaries.—Will all Local Hon. Secretaries kindly notify to our organising Secretary, Mr. J. Mercer, 611, Chorley Old Road, Bolton, Lancs., the alterations and additions which should be made in the first printed list of members as regards their several districts? In return he will notify to them the enrolments which have been made at headquarters for their districts. It is hoped that this exchange of information between the organising secretary and the local secretaries will take place monthly (as soon after the last day of each month as possible), so that the Organising Secretary may be able to make a monthly statement in THE COUNTRY-SIDE of the growth of the Association.

Free Expert Advice to Members.—BIOLOGICAL CHEMISTRY AND MICROSCOPICAL WORK, SUCH AS THE PREPARATION OF STAINS, ETC.—Questions on the above will be answered, if a stamped and addressed envelope is enclosed, for members by Mr. S. Cheavin, Clematis House, Somerset Road, Huddersfield.

"Naturalist Club in the Potteries."—Mr. S. Priest F.G.S., 40, Church Terrace, Fenton, Stoke-on-Trent, writes in answer to a query in this column that all members of the B.E.N.A. and all young naturalists are welcome to the meetings of the Potteries Entomological and Naturalists' Club—the first and third Thursdays of each month in Room 1, Museum Buildings, Pall Mall, Hanley. President, Mr. Masefield, of Cheadle.

Schools' Mutual Aid.—A welcome contribution of 10s. has been received from a Paris member of the B.E.N.A. towards the expenses of this scheme, and has been forwarded to the hon. secretary, the Hon. Cordelia Leigh, 32, Chester Street, Grosvenor Place, S.W.

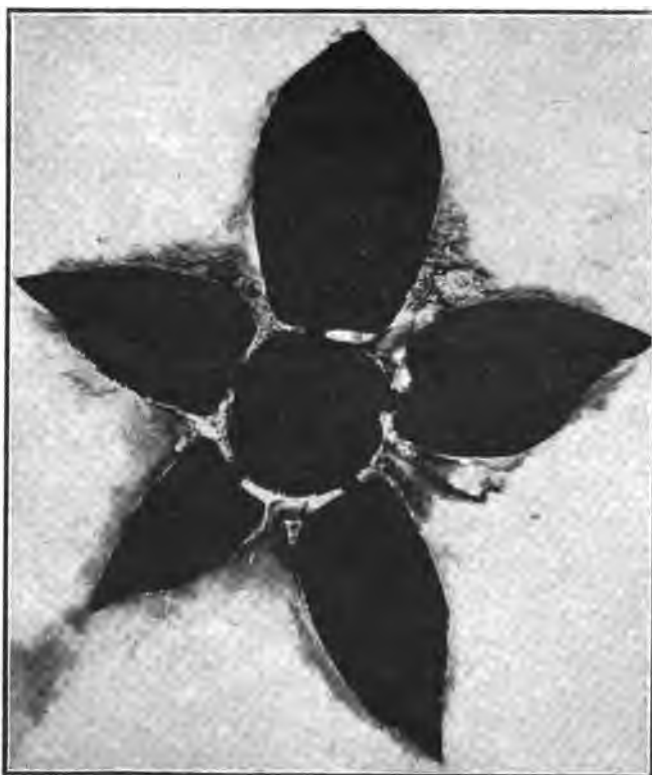
The *School Government Chronicle*, in favourably commenting upon this scheme, makes a number of very good suggestions:—"In earnest of goodwill we will offer the suggestion that examples of objects characteristic of the special opportunities of town schools may easily be multiplied by reference to only a few of the common but distinctive experiences of town life. Local industries, for example, may often be made to yield inexpensive and interesting objects. The beautiful metal shavings that strew the floors of the machine-shops of engineering works occur as a passing example. They may generally be had for the civil asking, in any such modest quantity as would serve. The textile trades and the innumerable small-ware industries can furnish cheap supplies. And something, it must be hoped, can be done that will help to take the false glamour from city life as it is apt to appear to the distant vision or the occasional visits of the country child." As the chief difficulty of the scheme is to arrange a suitable return which the town schools can make this suggestion is very helpful.

Identification of Specimens.—Specimens will be identified for members as under:—

BUTTERFLIES AND MOTHS, in the *Bearwood District*, near Birmingham, including Bearwood, Harborne, Warley, and Quinton, by Mr. A. Taplin, 10, Long Hyde Road, Bearwood, Smethwick, near Birmingham.

(Continued on page 190.)

"DAILY MAIL."
The Naturalist's Daily Newspaper.



What is it?

£1 for the Correct Answer.

Here is another of the new absorbing and interesting skill contests which the "Country-Side" is providing for its readers.

This photograph shows part of a very common object.

The object here shown has been considerably magnified. Now what is it?

Show it to all your friends and ask them what it is.

Look round your home during the next day or two; you are pretty certain to see the object shown.

ONE SOVEREIGN will be given to the reader who sends the correct solution, or if more than one are correct the pound will be divided.

Address replies to—

"WHAT IS IT?"

COUNTRY-SIDE OFFICE,
2 & 4, TUDOR STREET, LONDON, E.C.

All solutions must be received on or before February 16th.



The Garden.

Work for the Week.

Seed Buying.

NOW is the great time for buying seeds and other garden requirements. Seedsmen's catalogues are always interesting to the keen gardener, and their advent may be said to fairly mark the dawn of a new season of activity in the garden. Many of them well merit the adjective magnificent obviously. They must cost a considerable sum to produce, and yet they can usually be obtained for the outlay of a postcard.

There is always a temptation to buy more seeds than are really needed. We would suggest that an examination of the stock in hand should invariably be made before ordering. Also that careful consideration should be given to the quantity required.

It is a common practice for the possessor of a small garden to lay in sufficient cabbage seed, etc., to plant a ten acre field, and the buying of too much is very apt not only to hurt the purchaser's pocket, but to lead to absurdly thick sowing with the attendant disastrous results.

Do not be too eager to purchase highly belauded novelties; it is not unlikely that old and well-tried sorts are still the best. A guide to the best sorts of vegetable seeds appeared in our issue of January 26th.

Kitchen Garden.

The ground should now be in good order for seed sowing, of which there will presently be plenty to be done. Sowings of the early sorts of peas and early horn carrot may be made in the most sheltered positions that can be given to them, and celery should be sown in a frame.

Where vegetables are required extra early for exhibition, given open weather many other sowings will be made, but the average gardener will be well advised, and be saved many disappointments, if he does not aspire to be among the very earliest.

Where the preparation of the soil has been delayed through bad weather or other causes no time must be lost in getting digging, trenching, and manuring work finished.

Early Potatoes.

Earliness is, however, certainly advisable with potatoes, the common country practice of deferring planting until whenever Good Friday may happen to fall having nothing to recommend it. For years past good results have followed upon a planting we have made in early February, and although admittedly the proceeding is rather a speculative one, extra early potatoes are so very acceptable that we counsel a first planting being made as soon as the ground is fairly dry and the weather soft.

For this it is advisable that the bed should have been made up with as much of the residue from the fire-heap and other light, nourishing material as may be available. If some of this is laid in the trenches

when planting, so that the roots find it at once, it will prove very helpful. Early planting has the great merit that it is a safeguard against disease, which rarely breaks out until autumn; indeed, the planting of the main crop should take place not later than mid-March. There is a great variety of good early potatoes. That very old favourite, Myatt's Ashleaf, still holds its own among the kidneys, whilst our preference is for Early Puritan and Sharpe's Victor amongst the early round.

Flower Garden, etc.

Any necessary digging or work in the nature of alterations and the planting of deciduous shrubs should be done as soon as possible, as with the approach of spring time will soon be at a premium in all departments of the garden. Do not



Photo: [R. W. Allars.]
Cereus Napoleonis.

A night flowering species which thrives on a most meagre supply of food.

neglect to stake and mulch trees after planting, as these are very necessary precautions to take against the effects of the strong, drying winds of early spring. Winter pruning must also be brought to a conclusion, and if any turf has to be laid, it must be done quickly.

Lawns will be benefitted by a thorough rolling.

Provision of New Soil.

Whilst this most important requirement is well attended to in large gardens, it is often greatly overlooked in small ones, where the provision of a few loads of good new soil would have a markedly beneficial effect upon the gardening.

The most valuable soil for general pur-

poses is the top four inches or so taken up in square sods from a field of turf. These should be carefully stacked grass side downwards with or without layers of stable manure in between. The sight of a large heap of such excellent material is very cheering to a keen gardener. It will be fit for use after it has been stacked long enough—a matter of a few weeks—to kill the grass, and will be found simply invaluable for a variety of purposes. Good turfy loam is an absolute necessity for growing cucumbers, melons, and some other crops.

It is almost too late now to get in new soil for re-filling flower-beds this spring, but a stack might well be made now to use for this purpose next winter. Suitable soil is always to be had in the suburbs where fields are for ever being covered with bricks and mortar, but some judgment is requisite in its selection. 7s. 6d. is a fair price for a good load, or it should cost rather less if bought in quantity.

Greenhouse Cleaning.

The practice of a good housewife in having a thorough spring-cleaning should also be carried into effect in the greenhouse, where, however, for obvious reasons, it is certainly advisable to carry out this uncomfortable operation earlier.

Many amateur's greenhouses will have but little in them just now. Where possible, we recommend that what plants there are should be temporarily housed elsewhere, while a thorough cleaning of the house takes place. Make the best possible use of such an opportunity to exterminate insect pests by such methods as turning out every particle of loose soil, and by fumigating at treble strength. Wash the glass and give the inside woodwork a coat of paint.

G. T.

Cereus Napoleonis.

A good plant for Conservatory walls.

THE night-flowering species of cereus form an interesting group of climbing somewhat straggling growers which attach themselves to trees, etc., by means of aerial roots, and apparently thrive on a most meagre supply of food.

They are excellent plants for clothing the back walls of warm conservatories or pillars in large stoves, but they are now rarely seen notwithstanding their adaptability and the glory of their flowers.

There are about a dozen of them in cultivation, the best known being *C. grandiflorus*, *C. nycticalus*, *C. triangularis*, *C. Macdonaldiae*, and the one here figured. This has sharply angled stems with tufts of spines at intervals, and the flowers are satiny white with a ray-like whorl of yellowish sepals, and they are very fragrant. They expand in the evening and last until noon of the next day.

Fruits are sometimes matured on cultivated plants, and they contain numerous small black seeds. This species is sometimes confused with *C. acutangulus*.

The Garden.

Witch Hazels.

UNTIL the frost came near the end of last month the witch hazels were the most attractive shrubs in the open air. Their star-shaped golden-yellow flowers with crimson eye and crinkly petals commenced to open early in January, and although arrested by the frost, they will continue to be attractive until February is out.

The man in the street is puzzled when he sees a bush exactly like a hazel blooming in mid-winter and braving the hardest frosts. The best of these are Japanese, the oldest of which, known as *Hamamelis arborea*, has been with us forty years, the last addition, made in 1898, being *H. mollis*, which has larger flowers of a brighter yellow than those of any other species, whilst its leaves, developed after the flowers are over, are the largest in the genus, and are felted beneath with soft hairs. Any nurseryman can supply young plants of *H. arborea* at about 2s. 6d. each, and of *H. mollis* at about 5s.

J. G. W.

The Glaucous Atlas Cedar.

THE merits of the Atlas cedar as a tree for parks and large gardens are generally known. Of the three cedars, Atlas, Lebanon, and the Himalayan Deodar, it is the best for this country, and although said to have been introduced from Mt. Atlas only some sixty years ago, there are many magnificent specimens of it in the British Isles.

In addition to its ornamental value the wood is useful for various purposes, and the tree will no doubt in time figure largely in British forestry. There is a variety of it in which the leaves are almost silvery white, especially in older trees.

At Eastnor Castle there are many large examples of this variety distributed generally over the grounds which were raised from seeds collected in Algeria by Earl Somers. Young plants of the glaucous variety may be obtained from nurserymen at from 3s. 6d. to 21s. each.

As a specimen in a conspicuous place on a lawn with darker trees for a background it has few equals among variegated conifers. We have seen quite young trees of it in Messrs. J. Veitch and Sons' nursery at Coombe Wood, the leaves of which were so white as to appear in the distance as if covered with hoar frost. In a park or public garden a group of this cedar would be a striking feature.

J. G. W.

To Remove Moss and Lichen from Trees.

How often we find both the appearance and the health of trees in an orchard suffering by reason of the moss and lichen which cover their trunks and branches. The cause may be either neglect or unhealthy growth through unsuitable soil. In some cases the trees may be stimulated into stronger growth by better drainage or mulching, in which case they will throw off the old bark and the moss with it, but if these methods fail they may be treated in other ways.

The common way is to lime-wash the trunks of the trees, but this method is unsightly and not of much service to those trees which have their branches badly affected. A much better method is to scrape the moss and lichen off with a blunt instrument, taking care not to injure the bark, and apply a solution of soft soap and common salt in the proportion of a gallon of water to 1 lb. of soft soap and as much salt as it will take up. This should be applied as warm as the hand can bear, and should be put on with any old paint brush and should be rubbed into the crevices.

Caustic soda has been recommended instead of common salt, but it is rather more expensive, not so easy to procure, and in inexperienced hands may do more harm than good.

J. G. W.

The Golden Chestnut.

THE Golden Chestnut is *Castanopsis chrysophylla*. Although the older botanists realised that this plant should be well able to stand the climate of this country, it was not until about 1845, fifteen years after its discovery in North West America, that any of the seeds sent over to Europe were successfully germinated. The plant was for many years considered a great rarity, even at Kew. At the present time, however, thanks to skilful propagators, and the increased facilities for the collection and transportation of seeds, it may now be found in every good collection of trees and shrubs. Although the modest dimensions of 10 or 12 feet high, which it attains in the open in this country, by no means compare with the 100 or even 150 feet to which it grows under favourable conditions in its native land; it is a strong growing plant, and one likely to find favour with the multitude. Its leaves are smaller than most of the other members of the chestnut tribe, being about two inches long and an inch broad. They are dark green above and bright canary yellow underneath, and possess the further advantage of being evergreen. The fruit, which is edible, is exactly like that of the sweet chestnut, but the seeds do not mature in this country. Although a slightly sheltered position is favourable to the plant, it is not necessary in the south and west. A loamy soil is suitable to it, but it should be well drained and not too heavy.

J. G.

St. Dabeoc's Heath.

THERE is a charm about this little plant which makes it always a favourite for the rockery, wild garden, etc. It is quite easy to grow, but, like all other ericaceous plants, it must have a good peaty, or at any rate non-limey, soil to grow in. Its habit is naturally straggling and quite dwarf, but the flowers are borne on erect stems, which stand about six inches above the foliage.

Please show the enlarged "Country-Side" to all your friends who are interested in gardening.

and which bloom from June to September. These flowers somewhat resemble those of the arbutus in shape, but they are if anything larger and vary in colour from white to an almost purple pink. Although not an inhabitant of Great Britain, *Daböcia polifolia* is one of the native plants of Ireland, where it is plentiful in the counties of Mayo and Conemara. Propagation is easily carried out by means of cuttings or layers, which should be made in September or October, the cuttings being placed either in a cool house or under a handlight in the open. It is stated that St. Dabeoc, from whom the plant takes its name, was a native of Donegal, and it is even said that he was the patron saint of gardeners, but on this point there appears to be no certainty.

The Golden Cornish Elm.

FINE trees with coloured foliage are so valuable that the addition of a beautiful golden elm will be of considerable interest to planters. This is a variety of the Cornish elm, by name *Ulmus campestris*, var. *Dicksonii*, the raisers being Messrs. Dickson, of Chester. It has inherited the habit and hardness of its parent, and, unlike some other trees with abnormal foliage, the clear glowing gold colour of the leaves is said to be retained until the leaves fall. The effect of a fine specimen golden elm should well-nigh equal the splendour of a large copper beech.

Garden Queries Answered.

Carlina Thistle.—Both your specimens are forms of *Carlina vulgaris*, which varies in height from six to eighteen inches, and in having simple or more or less branched stems. The elongated branches on specimen 2, appear to be due to the central bud having been arrested, probably through injury, and this has caused the laterals to grow longer than usual. A second species *C. racemosa* has been found wild in Aran (Ireland) but that is quite different from *C. vulgaris*.—(to K. NORTH ROW, SEATON, DEVON.)

B.E.N.A.

(Continued from page 188.)

B.E.N.A. Motto.—Other quotations from great writers suggested as mottoes are:—

"Nature is at all times pleasant to us."

"No tears dim the sweet look that nature wears."

Suggested by C. J. TOMLINS.

"Go forth under the open sky and list to Nature's teaching."

Suggested by FLORENCE M. CLARKSON.

We have now had many good suggestions, but I think that, if possible, our motto should correspond to the letters B.E.N.A. I cannot think of a good one in English but in Latin, which is the traditional language of mottoes, I would propose, *Beatus Est Natura Amor*, meaning, "Happy or Blessed is the Love of Nature." Will members who are interested in the matter let me know on postcards whether they prefer this or any other motto which has been suggested?

Junior Club Wanted.—Will any adult member in the Walthamstow district take the lead in forming a Club for junior members in that district? The inquiry is made by request.

Free Distribution of Specimens.—Mr. H. G. Brock, 3, Doncaster Gardens, Harringay, London, N., who has been distributing butterflies and moths and birds' eggs to schools and young students in his district, reports that his supply is running short, especially of birds' eggs, although applications continue to come. Perhaps some readers may be able to replenish his store with specimens which they do not want.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 92. VOL. 4.

FEBRUARY 16, 1907.

1d. WEEKLY.

A Naturalist in North Lincolnshire.

Among the Black-headed Gulls.

ABOUT midway on the Great Central line, which connects Doncaster and Grimsby, lies the station of Frodingham and Scunthorpe. To the traveller gazing through the windows of his compartment the most remarkable features of the landscape there are the big and ugly shapes of the blast furnaces belonging to some two or three ironworks established close by, and the huge pile of slag and other refuse from the fires, which disfigures the aspect of the green fields and commons.

Frodingham is but a hamlet which accommodates the numerous colony of workers in iron and steel, and Scunthorpe, though the principal town of the district, contains nothing of interest to the casual visitor. The prosperity of the place is due to the ironstone which is here locally distributed, and which has been exploited with great commercial success during the last two decades.

It is with Scunthorpe, however, and the surrounding neighbourhood that we propose to deal; for, although to the tourist passing through by rail, this part of northern Lincolnshire may seem, perhaps, uninteresting, it has, to those who traverse it rightly, a fascination and a charm quite its own. And this apart, the locality is singularly rich in interest to naturalist, geologist, and archaeologist.

The undulating country of the Wold, as this northern part of the county is called, comprises some of the richest agricultural districts in the Kingdom, and presents many attractive features, not a little surprising to those whose impressions of Lincolnshire are based upon experience of the southern fen-lands.

Scunthorpe may be located by those experts in the geological characteristics of the county by its situation on the crimson low ridge of "Cliff Hills," which runs northward from Grantham to the Humber. It lies approximately due north of Lincoln, and about ten miles south of the Humber.

To a naturalist, or, for that matter, to any lover of the wild things of nature, exceptional interest attaches to the celebrated Gull Ponds of Twigmore Warren, situated at Scawby, a small village distant a few miles from Scunthorpe, which have enjoyed for years an extraordinary popularity as a breeding place of the Black-headed Gull (*Larus ridibundus*).

The gregarious nature of most sea-birds during the breeding season and the unflinching regularity with which they return, year after year, to certain favoured spots for breeding purposes, is a matter of common knowledge.

As a rule these familiar haunts are situated, as one would expect, in close proximity to the ocean, either upon some sea-girt islet or rock, or upon the face of a precipitous cliff.

The Black-headed Gulls, however, are in the habit of repairing to inland retreats during the breeding season. Such a resort have the Gull-Ponds of Twigmore long been. They are situated on the estate of Scawby Hall.

There are two sheets of water, the larger of which is rather a small lake than a mere pond, charmingly situated in a hollow, well wooded with pines and other trees, and bright, at the proper season, with the gay blossoms of many rhododendron bushes.

Hither, the gulls begin to come towards the end of March, and within a month vast numbers have assembled. The first eggs make their appearance at the latter end of April, but the best time to visit the ponds is a month later, at the end of May or early in

June, when the birds are nearly all sitting, and the margins of the ponds are literally covered with eggs. As the month of June wears on, the colony is gradually thinned out by daily departures until by the end of July not a gull is to be seen.

An extraordinary spectacle, more easily imagined than described, the ponds present during the breeding season. Dotted thick upon the surface of the water, whitening the reeds of the margins and the banks in their thousands, and darkening the sky in dense flight, are many thousands of snowy gulls, wearing the matrimonial livery of dark plumage on the head, from which it takes its popular name.

The air is filled with ceaseless raucous cries, which sound on the out-

skirts of the encircling thicket like nothing so much as the roar of a racecourse when the numbers go up. And in the
(Continued on page 199.)



Published by Courtesy of the Great Central Railway.

The Gull Ponds at Twigmore.

There are two sheets of water charmingly situated in a hollow, well wooded with pines and other trees. Hither the Gulls come in vast numbers.

Country-Side Notes.

"The common things of this world will for ever keep the firmest hold upon human interest and human affections."—LEO. H. GRINDOR.—Sent by F. Fuller.

THE question "Can Animals Think?" is a most fascinating subject of inquiry, provided that we agree from the outset that by "thinking" we mean thinking in the human sense. The ordeal of "Princess Trixie," the performing mare at the Palace Theatre in London, has brought this question to a direct point; because it was claimed for the mare that she possessed intelligence of the human kind, being able to recognise figures as symbols of abstract numbers, and therefore able to do simple sums in arithmetic. This is entirely different from animal intelligence, which, although in many respects as acute as—or more acute than—human intelligence of the same kind, is totally distinct from the human being's conscious power of thinking about abstract qualities and quantities, and so on, apart from the concrete things or real experiences to which they belong.

For want of this distinction much of the correspondence which reaches me on the question, "Can Animals Think?" must be discarded as irrelevant, because it would only obscure the issue, although it may be extremely interesting (and may be used hereafter) as illustrating animal intelligence. Let me quote one of the stories, as a sample.

There is a certain pet dog of a sporting breed whose gambols with the cat of the house were a delight to witness. The two animals were the most charming playfellows. One day a strange cat appeared upon the scene, and—the dog killed it. How the trouble began I am not told, but probably the dog began to play, the frightened cat resented this with tooth and claw, and the rest followed. The dog, however, was severely punished, and ever since it has refused to play with or take any notice of its old friend. When the cat pats its face in the way that was always provocative of a romp, it simply turns its head away with a patient wistful look, in which my correspondent reads remorse and self-mortification in atonement for its crime. Thus interpreted, the story places the dog on a par, mentally and morally, with man.

But the facts do not really support this high pretension. Indeed, dispassionately viewed, they establish the contrary. The dog, unlike most dogs, had learnt to regard a cat as a comrade and a playfellow, instead of a natural enemy, to be hunted up the nearest tree with proper precaution in avoiding its claws. Then the strange cat came on the scene, and the dog, without any regard for claws, started in for a romp. Irritated or agonised by the result, the dog then used its teeth; and a dead cat was the end of that game. To the dog, there was no moral difference between playing with a friendly cat and killing one that was hostile. Each was "cat" and he treated both as circum-

stances required. Then came the chastisement.

Now, the mind of a dog is very quick at drawing conclusions from experience. We have a puppy at home now who was, until a week ago, the delighted companion of one of my young boys. Now, nothing will induce that puppy to respond to the youngster's summons to a ramble. The reason is that last week the puppy tore some slippers to pieces, and the boy was deputed to show him the torn slippers and to smack him. This was done, and now the puppy, having no moral sense as regards damaged slippers, merely regards the boy as a person who chastises, and avoids his company.

The dog in the other story drew a different conclusion from the facts, but one equally remote from the human sentiments attributed to him. He had treated a friendly cat as a friend and a hostile cat as an enemy, and had been punished. He connected his punishment with his treatment of cats as circumstances demanded, and learned not to have any dealings with them. If he should give way to his impulse to play with the friendly cat, as he gave way to his impulse to fight with the hostile cat, the same unpleasant consequences would, he thought, follow. Perhaps, as a puppy, he had been chastised for stealing food, and had been honest ever since. Now, he had been chastised for touching a cat, and was not going to touch one again. It is pathetic, this blind obedience to orders misunderstood; but it does not rise to the level of human remorse and self-inflicted penance for sin, although the wistful look in a dear dog's eyes may make one feel that it has all our human qualities.

A question very frequently asked, especially by visitors from distant lands and from parts of Britain where the nightingale is unknown, is in what places near London the bird can be heard in season. Such places are, of course, numerous, but it would be very interesting to have a complete record. Will interested readers who dwell in any town, suburb, or village within, say, twenty-five miles of London, send me a postcard to say whether the nightingale annually visits their neighbourhood or not? In return I will prepare and publish, in readiness for the season, a "nightingale map," showing the distribution of this famous songster round the metropolis. Besides being interesting and very useful to hundreds who would like to hear the bird, but do not know where to go for the purpose, such a map might possess scientific value, as throwing light upon the causes which influence the nightingale's erratic distribution.

Several correspondents have asked my opinion about the woodpigeon epidemic in Hampshire, which has been attracting so much attention. This was discussed by the gamekeeper-naturalist who writes our "Gamekeeper's Notebook" in THE COUNTRY-SIDE of February 2nd. He discussed it also last year. Sometimes, when

Warham, Norfolk.

acorns are plentiful, it has been attributed to a surfeit of acorns. In other years, when there is a great crop of beech-nuts, it has been attributed to that; and I have speculated myself upon the possibility that the hairs with which a beech-nut is clothed may have an irritating effect upon the pigeon's throat. I think, however, we may regard it as proved that the disease is not due to any particular diet. It is very prevalent this year, when neither the beech nor the oak have been peculiarly fruitful. It was very prevalent last year, when beech nuts were in excess; and in the previous year, when the acorn crop was wonderful.

The disease has attracted the attention of medical men, some of whom regard it as a cancer, and others as a diphtheria, and in the latter case a bacillus is said to have been isolated and called *Bacillus diphtheriæ columbarum*, i.e., the bacillus of pigeons' diphtheria. It is further stated that this diphtheria has no connection with human diphtheria, and that there is therefore no danger of infection from handling or eating the diseased birds. That this, at any rate, is so I think there can be no manner of doubt; because the disease is no new thing, and many thousands of persons have handled and eaten the birds without contracting any ailment. I should say, then, that birds which are shot in good condition, even if examination of their throats shows that they are diseased, are perfectly wholesome as food. I would not eat them myself, because the idea is distasteful; but persons who are not squeamish need not, I feel sure, apprehend any unpleasant consequences.

And now, as to the nature and origin of the disease. If the doctors say that it is the result of the *Bacillus diphtheriæ columbarum*, I have no doubt that they are right; but from examination of two birds sent to me I am strongly reminded of the disease well-known to pigeon fanciers—at least, it used to be well-known when I was young and kept a host of pigeons—as "canker." The beak of each bird was soft, yellowish, and unwholesome-looking, and the throat was clogged with a waxy growth. Except that the waxy growth used to be more external in domestic pigeons affected by "canker"—which was very contagious—there seems, to the naked eye, to be no more difference between the two diseases than might have been anticipated in the transference of the virus from domestic pigeons to birds belonging to a distinct genus, living a wild, outdoor life.

The fact that most of the woodpigeons which spend the winter in Britain come from oversea, while the disease has been especially prevalent each year in Hampshire and Sussex, points to the conclusion that it is locally acquired; and a possible explanation seems to me to be that in this part of the country disease is prevalent in some overcrowded pigeon-houses whose inmates feed in the fields and thus convey the infection to the wild woodpigeon. When a bird suffers from "canker," if it

remember rightly, it is constantly sneezing; and thus the infectious matter would be scattered around upon the turnips, among which the birds were feeding. I admit, however, that all this is pure speculation, based upon the fact that the two woodpigeons sent to me reminded me strongly of the extreme cases of "canker" among domestic pigeons, which I handled many years ago. Whatever the cause of the disease may be, however, it illustrates in a remarkable manner nature's method of curbing her own excess. For several years past the flocks of woodpigeons in winter have been a burden almost greater than the farmer could bear. But nature brings its own remedy for overcrowding; and now, in many Hampshire woods, it is easier to pick up a dead woodpigeon than to see a living one.

* * *

I cannot recollect such abrupt changes as occurred in North Norfolk between January 25th and 26th in the midst of the recent spell of severe weather; but even more surprising than the ups and downs of the barometer and thermometer was the ready response of small wild life thereto. At 11.30 p.m. on the 25th the window panes were still coated with frosted flagree-work; but at 12.30, when I put away my writing and again looked out, all the frost had disappeared and the panes were dripping with moisture outside, showing that the temperature out of doors had become higher than that within. But what really amazed me was that in the corners of two of the panes (outside) spiders were seated in the centres of their webs, and winter gnats, attracted by the light, were sitting on the glass. The next morning frost and snow had returned; but it seems really marvellous that, during a spell of Arctic weather, life in small insect and spider should be so alert to seize the opportunity of a few hours' thaw to come out and snatch a hurried meal. I examined the outside of the window next day, and found some narrow crevices between the wood and the brickwork where the spiders were doubtless hiding; and the gnats were probably sheltering in the woodwork of the verandah overhead. It is wonderful, nevertheless, that they should respond so quickly to a brief change of weather.

* * *

We hear a great deal nowadays of the injurious multiplication of the rook, especially in winter; but a note from one of our regular observers, "G. F.," of Quorn, Leics., reminds me that several other readers have made the same observation lately, namely, that jackdaws have increased more than rooks, some estimating that about one-third of most flocks of crow-birds is now usually composed of jackdaws, whereas formerly there seemed to be scarcely one jackdaw to twenty rooks or more. This agrees with my own observation that in North Norfolk in winter the proportion of jackdaws to rooks has certainly increased; and the importance of the matter lies in the general agreement of farmers that jackdaws are almost always mischievous, so that what has appeared to be the deterioration of the character of the rook may be partly due to the presence of more jackdaws than formerly. This, however, would only be a partial explanation; because, unfortunately, there is evidence against the rook in some

matters which cannot thus be shifted to the charge of his naughty companions.

* * *

I am glad to find that there are quite a number of members of the B.E.N.A. who habitually sign those letters after their names in ordinary correspondence. Considering that the Association dispenses with the formality of election of members, as well as with the payment of subscriptions, some may think that the distinction of membership is not sufficient to justify the practice; but it is a mistaken view that a man should affix his own "distinction" after his name. The modest man will leave that to his biographer; and I have yet to come across a soldier who puts "V.C."—in spite of the rare value of that honour—after his ordinary signature. But the use of the letters "B.E.N.A." is open to no misconception, while it has a distinct advantage. All our members are bound together by their common love of nature; and in a large association whose roll of membership increases every day you never know when a chance correspondent may prove to be a fellow member. If he is not, the letters may in many cases excite curiosity, and consequent inquiry be followed by the addition of a new recruit to the growing ranks.

* * *

In addition to this, all of us who are fond of natural pursuits have the feeling at the back of our minds that others whose tastes lie in the same direction must have much good in them. My own experience of people who study nature is that they are, as a class, the best people in the world. There are certain virtues of patience and sympathy, of caution against hasty conclusions, of readiness to impart knowledge and to accommodate on to every kind of society, of respect for those who know and indulgence for those who do not as yet, which stamp nature-lovers as a brotherhood; and by the letters "B.E.N.A." we shall often discover a worthy brother who would otherwise have remained a stranger to us.

E. Kay Robinson.

February: Snowdrops.

February Fair-Maids!
Clad in kirtles white,
Dainty floral heralds
Of the Spring's delight!
Blooming 'mid the snowdrifts,
And the Winter promise,
Just to bring the promise
Of a sweeter time!

February Fair-Maids,
White as snowflakes cold,
Though your crocus lovers
Flaunt in blue and gold.
Garbed like gallant courtiers,
All in royal hue,
Marching in battalions,
In the sunshine new.

February Fair-Maids,
With your tiny bells
Chiming elfin music
In the forest dells;
Or in sheltered gardens,
Where the blackbirds sing,
When your spotless blossoms
Usher in the Spring!

MAUD E. SARGENT.

Can Animals Think?

Dear Sir,—I have carefully read, and am much interested in, your article on this subject in current number of COUNTRY-SIDE, and, apart from some coincidence, I have every reason to believe that I was present at the same "turn" as you criticise therein, and personally gave the word "dog." However, I have seen "Princess Trixie" perform several times, and on each occasion I have given her different tests. She successfully spelt the word "Texas" for me, which, in my opinion, is the most difficult ever given when I was present. The only occasion on which she failed with a question personally given was "7 and 9 add," in answer to which she gave "17," afterwards correcting it to "10." Apart from this I have seen her make various other errors—presumably owing to the fact that she either misunderstood or did not observe the signal. I have been an enthusiastic reader of THE COUNTRY-SIDE from No. 1, and am entirely in line with practically all your opinions expressed therein.—W. N. J. MADDLE, Green Street, Enfield Highway.

38, Amberley Street,
Sunderland.

February 4th, 1907.

Dear Sir,—I read your article in this week's issue re "Princess Trixie" with great pleasure, and having laid the paper down, took up the fourth volume of "Pepys' Diary." By a strange coincidence, the first entry in it deals with a similar case. I give the account in the writer's own words:—"September 1st, 1668. To Bartholomew Fair, and there saw several sights; among others, the mare that tells money, and many things, to admiration; and, among others, come to me, when she was bid to go to him of the company, that most loved a pretty wench in a corner. And this did cost me 12d. to the horse, which I had flung him before, and did give me occasion to kiss a mighty 'belle fille' that was exceeding plain, but 'fort belle.'"

Now, Sir. To say the least of it, and to say it in words which he would probably himself have used, this is *mighty curious*. I must congratulate you, Mr. Editor, on having escaped such a trying ordeal, and with every good wish for the success of your interesting paper.—Yours etc., WALTER DAWSON.

Dear Sir,—I think that the following extracts from a report of Sir Oliver Lodge's address on the "Ascent and Fall of Man," on Sunday, February 3rd, at Whitefield's Tabernacle, have direct bearing on the question to what extent animals can think, and I think that the distinguished scientist follows remarkably closely upon the lines of your "Religion of Nature":—"I am a being, alive and conscious, upon this earth. My ancestors have ascended by a gradual process from a low form of animal life, and by struggle and suffering become a man." . . . Man is the only part of the animal world which is self-conscious. And this enables him to possess character, will, choice, freedom to act, and all other human attributes. It is this power of discernment, this power of choice, which links us with the divine. By means of language, spoken and written, we are able to make use of the accumulated experience of our ancestors. . . . Man is the outcome of long ages of preparation. Now that he knows enough to help in the process, now that we are no longer worked from the outside, we may hope to cooperate with the Creator. . . . Man differs from other animals in having a sense of right and wrong—"a knowledge of good and evil," as the old legend put it. And it was this very fact of becoming conscious of this difference between good and evil, of this power to choose the good and reject the bad, that marked a stage in the history of human life."—Yours etc., A MAN WHO THINKS.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

"Strange Playmates."—I had a large St. Bernard dog, and on one occasion, while staying for a short time in Manchester, I arranged to keep the dog chained in a loose box at some stables off Deansgate. At the same stable was kept a pig (it seemed to be a kind of pet in the neighbourhood) which was allowed at times to roam at large though it had its particular sty in a corner of the building. Going one morning to give the dog his customary walk, I found pig and dog comfortably asleep together. I was surprised, as my dog was usually very particular in her choice of associates. I unchained her and walked in the direction of Albert Square when, to my amusement, I found that the pig had followed the dog. I at once returned to the stables followed closely by my strangely contrasted companions. All the time my dog remained the two animals were the best of friends, and whenever opportunity occurred, the pig made directly for my dog's horse-box.—W. H. A., Edinburgh.

Tenacity of Life in a Hen.—We were threshing oats in a large shed containing hay and corn on the 17th ult., and when about two feet from the ground came upon a hen which had evidently pushed under one of the sheaves of corn in order to lay; this must have occurred during an interval of carrying, possibly during the dinner hour. When I say that the corn was stacked on the 10th September and threshed on the 17th January it will be seen that she existed without water, and with only what little corn came within her reach, for a period of four months and seven days. That she was not crushed to death (of which I have seen instances), was probably due to her having made her nest partly in the hay against which the corn was stacked, thus there was probably no direct vertical pressure upon her, although the lateral pressure was sufficient to prevent her moving, even to turn round, as was proved by the shape of the "form" in the hay and the one egg found under her embedded in her excrement. When liberated she was very emaciated and walked with difficulty, but is now recovering rapidly. The hen is a Partridge Wyandotte and her plumage is remarkably perfect, there being no signs of her having moulted.—W. L. S., Bangor, N. Wales.—[A somewhat similar case was recorded last year.—Ed.]

Needle in an Egg.—Hens must have a great power of swallowing. A needle $1\frac{1}{2}$ inches long was found in a rather rusty condition inside an egg.—C. WATSON, Limehouse, E. [Swallowed needles ordinarily have a curious way of travelling about the body; and this one must have found its way to the ovary.]

"The Work of the Ivy."—As a gardener and forester, I have had in my thirty-five years' experience many opportunities of watching and studying the effect which ivy seems to have on trees and houses. Ivy when growing on either trees or houses, does not obtain its food supply from its clinging to either the tree

or the wall. Whether it be in a young stage of growth or an old-established plant, if it is severed thoroughly from the root it will perish. I have severed some old plants a foot in diameter from old buildings, and made notes of the effects upon the house side, and it is marvellous how quickly the stoppage of the vital food supply is seen; it is simply like stopping the supply of fuel to a steam engine's boiler. With reference to the choking of elms or any other forest tree, by ivy growing so thickly upon them, my opinion is that it entirely depends upon the age of the tree when the ivy begins to encircle it, and the dryness or otherwise of the position.—VICTOR H. LUCAS, Gardener and Forester to County Boro', Barrow-in-Furness.

Great Spotted Woodpecker.—Two seasons ago I became possessed of a woodpecker taken from the nest by a friend. It was quite tame at the time and would sit on my hand while being fed. As time went on it was kept in a large box cage lined with cork, pockets being formed for it to sleep and hide in. Then came the tapping of the woodpecker.

not crush their food; they use the point of their beak to break up the food. If this were done on the smooth bark the pieces broken off would fall to the ground; so the first thing a woodpecker does is to make pockets all about in which to break up its food. But why all this tapping when there is no food about? In this case you will find that it is the hard wood that is tapped, not the bark, and only here and there, large holes being formed and visited day after day. Do they eat the wood to assist digestion? One day the door of my cage was left open and Mr. Woodpecker went away to be brought back dead. It was picked up by a neighbour [and noted as a "London record" in THE COUNTRY-SIDE.—Ed.] with most of the large feathers of one wing gone. It looked as if a cat had caught it. I have had the dead bird photographed with the "last post" it was at work on. I hope my loss will be our readers' gain.—JOHN ACUTT, Upland Road, East Dulwich.

Deferred Butterflies and Moths.—It is well known that in the Tropics the intense heat has the same effect as extreme cold, in that insects are rendered 'torpid.' Is it not possible that the *V. urtica*, which commenced hibernation on July 23rd, 1901, was affected in that way; especially as Mr. Beeston states that the weather was extremely hot at that time? A very hot day is by no means a "good" day for butterflies, which are apparently rendered torpid.

With regard to the Small Eggar moth, it is impossible to force the pupæ which are undeveloped in the previous autumn.—MERVYN J. L. DAVIS, Redland, Bristol.

The Rev. C. F. Thornewill has found sunshine to assist the pupæ of the Small Eggar, *lanestris*, to emerge? I have not tried sunshine, but I believe that it is heat, damp heat for preference, that they require.

I had some which did not emerge, so I placed them in a propagating frame in a stove house temperature about 80, and they came out in four days. I have also tried the death's head, privet hawk, etc., when found in the autumn, and they came out well, thus proving that a damp heat suits them.—W. MOORE, Cambridge. [It is well known that in this climate the best plan to secure specimens of the death's head is to "force" the chrysalids in damp heat in autumn.—Ed.]

Thrushes and Periwinkles.—One day during the very severe weather I was walking along the foreshore near Little Orme's Head, when my attention was arrested by a continual tap-tap-tap that could be heard amongst a patch of rocks just below me. On approaching the rocks carefully I was surprised to find three song-thrushes. Each bird had a large periwinkle and was endeavouring to smash the shell in the usual thrush manner—grasping the periwinkle firmly in the bill and striking it against a convenient stone. I watched the birds for some time and noticed that they had great difficulty in attaining their object, but once the shell was broken the contents were swallowed immediately. I am wondering if it is a common occurrence, as I cannot recall a similar case coming under my notice before. Of course it is common enough to see a thrush proceeding in the same way with snails.



Photo.]

[F. W. Brookman.]

"The Last Post."

This is a picture of a Great Spotted Woodpecker which was picked up in Dulwich and recorded in "The Country-Side." It turned out, however, to have been the property of our local B.E.N.A. Secretary, who sends us this picture with the "last post" that the bird was at work upon in the cage.

Why this incessant tapping? One might say it is their love call (incessant love), while another takes it as the means of getting their food by frightening the insects under the bark to the top of it so that they can be picked up. May it not be to do with their mode of taking their food? They take most of their food on trees which puts their feet out of action as they are required to hold on to the bark. Their beak being slender they can-

Remarkable Rabbit-Skull.—Herewith the skull of a rabbit. It was sent to me from Mr. Bashetson, butler at Riddlesworth Hall. The rabbit was caught by a warrener, and was in very good condition indeed. I am much interested in your Nature Notes and begged the loan of the skull to forward to you.—A. B. KNIGHTS, School House, Gardolisham, Thetford.



[Photo.] **Rabbit's Peculiar Teeth.** [J. P. K. R.]

This is the result of one tooth being broken, so that the opposite tooth in the other jaw continued to grow until it prevented the jaw closing, and all the front teeth grew abnormally.

[The skull exhibits to a marked degree the abnormal growth which takes place in the teeth of a rodent or gnawing animal when, through some accident, they are prevented from grinding each other down. In this case the left-hand upper tooth has formed a complete circle and penetrated the bone of the upper jaw. The cause of the trouble is easily seen. The right-hand lower tooth is considerably longer than its partner, showing that the latter was broken off at some time. This, of course, gave the tooth above it freedom to grow, and by the time the lower tooth had grown again it had curved so much that not only did the points not meet, but the mouth was held open. Thus all the teeth continued to grow, with the result shown. It may seem surprising that rabbits with teeth in this condition are usually in good condition; but they very quickly learn the trick of nibbling the herbage by placing their heads sideways to the ground; and, as rabbits ordinarily spend only a small portion of the twenty-four hours in feeding, the handicapped rabbit has only to devote more time to it to make himself as fat as he chooses.—Ed.]

Was Darwin Wrong?—I have not read the work by Scouler mentioned by Mr. Holder in last week's COUNTRY-SIDE in opposition to Darwin's evolutionary theory, so cannot say if his arguments can or cannot be refuted; but if they are on a par with the statement that because "Huxley carried the evolutionary process to the primordial indifferenced protoplasm, he most certainly gave the *coup de grace* to that theory (the evolutionary one)" then I must say I don't think much of them. Darwin was in no way accountable for Huxley's views, and his theory stands on its merits and has obtained world-wide acceptance amongst the thoughtful. It is in no way invalidated by Huxley's opinion. There is not a biologist of any eminence who is not an evolutionist; it is in keeping with the Cosmos; it goes hand in hand with the other physical laws, and makes one harmonious whole. Only by this theory can the numerous functionless and rudimentary organs in the human body be explained. Why, every man is, in himself, a living protest against the doctrine of special design; this is a question of absolute fact, and not of opinion. Does your correspondent know anything of geology and embryology? If so, he must know that the former proves beyond doubt that the earth's crust shows a well-defined sequence in its garnered remains from low forms of life up to the highest. And as to embryology, your correspondent commenced his earthly career as a microscopic one-celled

organism, and that one-celled organism, by its union with another equally lowly organism, became by continual increase of cells and specific differentiation of portions of those cells, a highly organised mass of cells—ycept a baby! Here in a few months is the whole case for evolution, so far as man is concerned—here is Darwinism, concentrated in every cradle.—C. H. RUSSELL, Wimbledon.

"Singing of Insects."—I have just been reading the "Anatomy of the Blow Fly," by T. B. Lowne, F.R.C.S., 1893, and as it throws some light on the origin of the singing I quote the following from it:—

"A small tympanic spiracle is situated in the tympanic fissure (near the base of the wing on the thorax) and is connected with a complex auditory and sound producing apparatus. It is controlled by a single valve which resembles a clip, and closes the tracheal tube with which it is connected. This spiracle is apparently exclusively expiratory, and I believe the issue of air from it is the cause of the humming sound made by the insect." It is probable that a similar organ is possessed by other insects such as Syrphus, and if so, it would explain why the sound was produced when the wings were stationary. The insect could also allow the wings to vibrate in unison with spiracle, and this would augment the volume of the sound produced.—A. T. MUNDY, Cornwood, Ivybridge, Devon.

"Do Birds Yawn?"—I have often noticed my two tame linnets yawn distinctly. They are with canaries and other birds, and are the only ones who do so.—E. C. B., Colstoun, Haddington, N.B. [Have others noticed this to be a special habit of linnets?—Ed.]

A Squirrel's Fall.—I saw a male squirrel fall about thirty feet with a rotten twig in its embrace. It went round and round until it arrived on *terra firma*, and then it ran to the foot of the same fir tree from which it fell and shortly after ran up it. It was close to the roadside and I expect I had startled it. Afterwards it jumped cautiously from tree to tree so it was not hurt.—RICHARD GRAHAM.

Scentless Violets.—

May I point out to the writer of this paragraph on page 134, that the above subject was alluded to in the "Mixed Bag" of THE COUNTRY-SIDE some fifteen months since? The cutting was evidently taken from an article on "Twice-flowering plants and Secondary blooms" in the *Ilford Guardian*, where the author says: "One defect is noticeable in all secondary blooms. The purple violet, sweet-scented in March, is odourless in October, The autumn-flowering honey-suckle is not one whit less beautiful than at midsummer, but it utterly lacks perfume. The same is true of many forced garden plants. We have tea-roses, carnations and mignonette, both in June and December, and detect no structural difference between the early and later blooms. Our winter treasures are scentless, that is all." Careful observation has confirmed the main statements in the above. A handful of *V. odorata*, pulled at Thaxted the last week in October, proved absolutely scentless, though in no other respect resembling *V. hirta*.

Moreover, the latter is hardly, if ever, deep purple, and does not appear to flower again after June. A bunch of wild honeysuckle also gathered in late October, was likewise devoid of perfume, though flowers from the same vine in July onward had delighted us with their fragrance. Fully-developed tea-roses and several heads of purple sweet-scented stocks were brought in from the garden at Christmas, and though quite normal in appearance, each lacked their characteristic perfume. Forced plants of hot-house growth—as white lilac and lilies-of-the-valley—do, I find, occasionally diffuse something of their natural fragrance, which, however, is much less marked than in seasonable, out-of-door specimens, and frequently not noticeable at all. Parma violets, carnations, and mignonette, sent from the Continent in winter, also seem strangely lacking in perfume; for the cut winter-violets of commerce are often sprayed with scent. Atmospheric changes undoubtedly affect the perfume of plants. This is particularly the case with the white may or hawthorn, whose blooms occasionally seem scentless in very warm and dry weather. Rainy weather, we know, intensifies sweet odours for the air is always heavy with herbaceous perfume after a shower. Cold then may exercise the same effect as excessive heat on the scent glands. That such was an eminent nature-lover's opinion may be gathered from the late Rev. C. A. John's *Botanical Rambles*, where on page 42 he writes of the "Sweet-scented Violet," *Viola Odorata*. You may possibly find a difficulty sometimes, especially if the weather be cold, when such flowers lose their fragrance, in deciding whether your flowers be really sweet violets or not. Cold, presumably, also affects the scent of the primrose.—A. L. G. FOWLER.

Hérons and Rooks.—Some years ago herons and rooks nested together in the trees growing on a small island in the lake in the park of the Marquis of Lansdowne at Calne, Wilts. I can safely say that at the time that the birds were repairing their nests preparatory to egg-laying the two species were on the very worst of terms.—A. FORRESTER.

Magpies' Old Homes.—I herewith beg to enclose a photograph of three magpies' nests—two of last year and one of 1905. It is only in



[Photo.] **Three Magpies' Nests.** [Copyright.]

In each of these the dome with which the Magpie covers its nest is plainly visible.

winter that these nests become "photographical," because previously they are screened by foliage. The photograph is interesting as showing how plentiful the bird is in some districts. From my observations I think that magpies prefer trees to build in, but when they are unable to find a suitable tree, they then willingly resort to hedges.—"A READER," Darlington.

Week's Wild Life in Pictures.

(See page 197.)

The Long-Eared Owl—Ivy with Aerial Roots—Folded Trap-door Snail—Common Sand Star—Winter Gnat or "Merry-Dancer"—Sparrow-hawk—An Early Lamb.

THE long-eared owl (1) is much commoner than most people suppose in Britain: for in most districts there is no pine wood and hardly any coppice with dark pine trees, where these birds do not breed. Like all owls, they suffer severely at the hands of gamekeepers, in spite of the fact that they do more good than harm to the game preserves as well as to the land. During the day they seem always wakeful, and often you may catch sight of one sitting upright on a high pine branch, close against the trunk and staring down at you with erect "ears" and round eyes, like a surprised cat. At dusk you may hear their peculiar call, which is not loud, but sounds like a dog baying in the distance. They make many other curious noises, the most striking of which is the sharply-repeated syllable "Rip, rip, rip," in almost human accent.

2. This picture of an ivy stem has special interest in connection with the discussion on "The Work of the Ivy" (See "Queries, Answers and Correspondence"), for it shows in what superfluous abundance the modified roots, often called "suckers," are produced, if we accept the theory that they serve no purpose except to cling to the ivy's support. But experiments have shown that they can absorb nourishment for the ivy; and wherever the nourishment is abundant, in the shape of decayed matter, they readily become real roots.

3. The trap-door snails, easily recognised by their slender spindle-shape, are so called because at a little distance inside the mouth of the shell is a trap-door. It is fitted in a groove and opens outwards, easily pushed open by the snail when it wants to walk, but springing back and closing the passage when the creature retires within. Of all the trap-door snails (*Clausilia*, from "Clausilium," a little door) the kind illustrated (*laminata*, or "folded") is distinguished by the roundness of the opening, and the straight folds of the shelly matter which protect it inside. This little snail with its almost transparent shell is not found everywhere, but seems very fond of climbing on beech trees. In the Birdlip Woods, in Gloucestershire, I have seen many hundreds of them.

4. This is the month in which, the shooting season being over, the gamekeeper begins to be very active in destroying "vermin," and he shows the sparrow-hawk no mercy, although the birds shot now are mostly migrants returning northward. From the falcon the sparrow-hawk is easily distinguished by its short wings, adapted for chasing small birds among the trees, and its long legs and spidery claws for clutching them. The wings of falcons, on the other hand, are long, and their legs short and strong. This female sparrow-hawk—easily distinguished from a male by the greyish, instead of ruddy brown, bars on the breast feathers—was killed by dashing through the window of a farmhouse near

Leamington, when in pursuit of a dodging bird.

5 and 6. The winter-gnat, or "merry-dancer" (not a true "gnat," but rather a "midge"), is a general favourite, probably on account of its appearance being accepted as an indication of fine weather. It is quite harmless and inoffensive in all its stages. Structurally, there is little striking about it apart from its exquisite delicacy of form; but its habit of ceaselessly "dancing," usually in companies, has made it familiar to everyone. The object of this dance is not certain, but it is supposed by many to have some connection with respiration. It is one of the wonders of nature that this tiny insect is almost always ready in mid-winter to come out and dance in the watery sunlight even when there is snow on the ground and ice on the ponds. Fig. 5 shows the insect immediately after alighting, and Fig. 6 at rest, both being enlarged.

7. Last week we gave a picture of a common Brittle-Star (accidentally omitting its name, *Ophiolirix fragilis*) and here is one of the closely-allied common Sand-Star, so-called for its pale sandy colour, though some are of a much darker shade of yellowish-brown than others. The rays are smooth and tapering, the spines on the sides being small and closely pressed down; or more usually missing altogether in those cast up by the high tides at this time of the year. On some parts of the Kentish coast this, and an allied species (*O. granulata*), may at times be found in hundreds amongst the many thousands of sea mice, sea cucumbers, crabs, fish, etc., thrown up on to the beach after a storm during the early part of the year.

8. In many parts of England we have been accustomed of late years to hear the first faint bleat of the new-born lamb amid the whistling of a snowstorm; and the further north you go the more likely is the lamb of mid-February to be ushered into a cold, white world. But March and April are the lambing months in Scotland: and, so far as England is concerned, the shepherd prefers for his charges the coldest weather that the winds can bring to the persistent rain with which February, too often for them, earns its name of "fill-dyke." Against cold you can protect both ewe and lamb in cosy pens, huddled with straw and furze. It is the chill damp of February deluges which lightens the farmer's purse after the season's lamb-sales.

FROM A READER.

Mr. B. T. Lowne, "Ravenscroft," Bromley Road, Catford, S.E., writes:—"I must take this opportunity to thank THE COUNTRY-SIDE for its interesting reading and free stereoscope. The stereoscope is so good that another member of the family insists on having one of his own, so I send under separate cover P.O. for 5s. for a stereoscope and ten stereographs."

Country-Side Library.

Two Charming Children's Books.

CHILDREN are lucky nowadays; and many a mother blessed with children of inquiring minds about birds and flowers must sigh to recollect that when she was young there were no such charming and useful books as these two—"Birds Shown to the Children" and "Flowers Shown to the Children," published at 2s. 6d. each by Messrs. T. C. and E. C. Jack.

Each of the little volumes contains forty-eight coloured plates almost all of which are excellent, including most of the birds in one case and wild flowers in the other which are likely to attract the attention of the intelligent youngster.

They are not always scientifically perfect, of course. Among the birds, for instance, the picture of the willow wren represents rather a chiffchaff as to length of wing (the chief distinguishing feature) and a wood warbler as to colouring; and the hedge-sparrow is faultily coloured. In the flower book the same may be said of some plants like the common sorrel, while the letterpress would suggest that there are only two kinds of St. John's wort.

These blemishes are trifling, however; for the books are fine value for the money, and will be found a boon in many homes.

Mr. R. Kearton's "Wild Life at Home" has been so successful that the publishers, Messrs. Cassell and Co., Ltd., have prepared a new and enlarged edition which will probably meet with even greater a welcome than its predecessor. The work is a concise and practical handbook of fieldcraft and nature photography.

The interesting volume by Professor R. S. Scharff, B.Sc., F.L.S., entitled "European Animals, their Geological History and Geographical Distribution," is the outcome of the Professor's remarkable Swiney Lectures on Geology, delivered at the Victoria and Albert Museum. In this book, the author discusses the chief elements of the fauna of the British Isles in detail. He then proceeds to the study of their geological history. This forms the introduction to the larger Continental problems founded upon animal distribution. The author follows the various groups of animals to their native lands, and describes their wanderings from the original centres of their dispersal, how they have advanced and frequently retreated again, the obstacles they have encountered in their progressive movements, and shows how we can still trace the ancient conditions of land and water in Europe by the existing distribution of fauna and flora. The publishers are Messrs. Archibald Constable and Co.

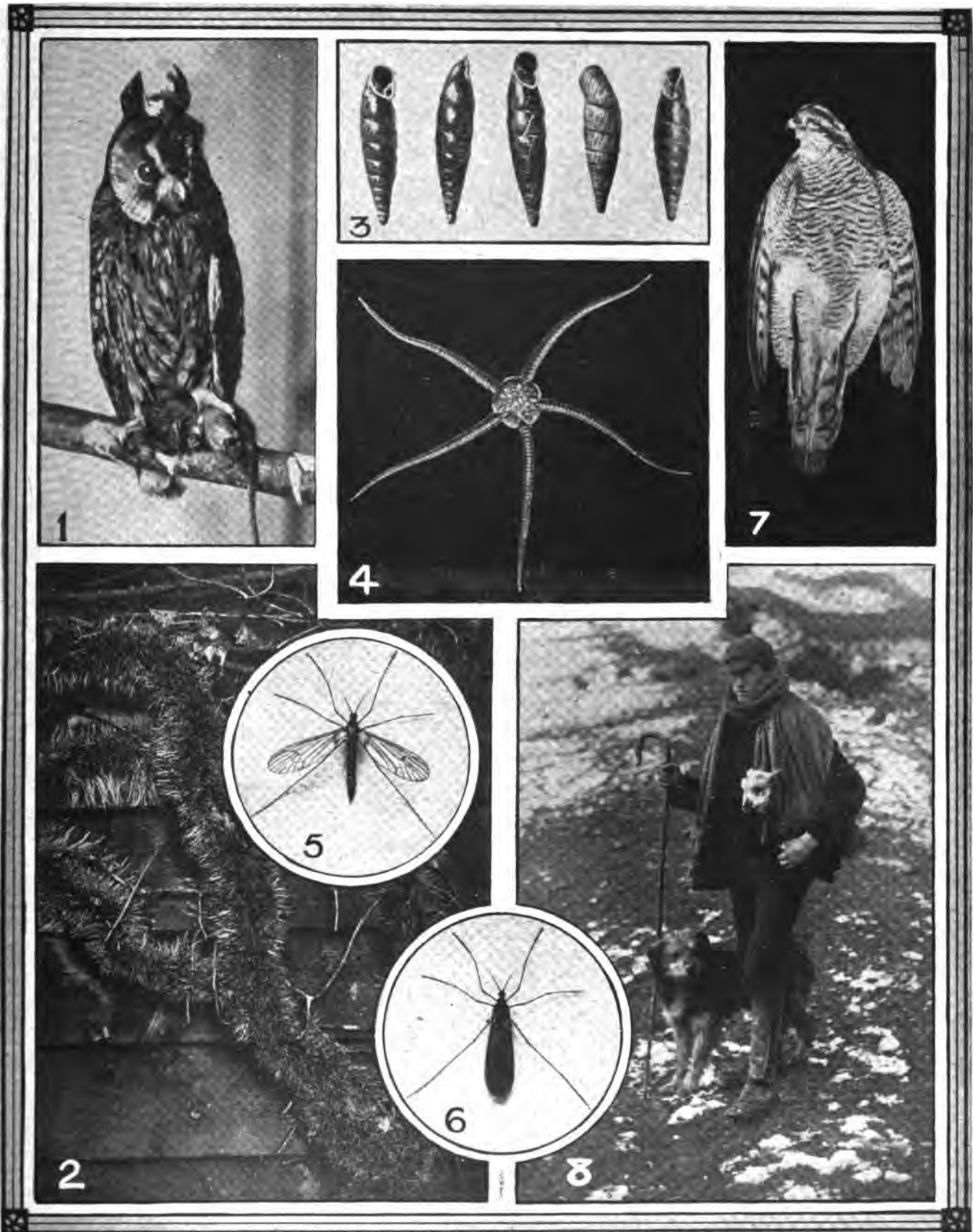
The same publishers will issue immediately the important new volume by Professor E. Ray Lankester, F.R.S., entitled "The Kingdom of Man."

"The Evolution of Matter" is the English translation of Dr. Gustave Le Bon's *L'Evolution de la Matière*. The book has attracted much attention in France, nearly 20,000 copies having been sold within a few months. Its author works out in it the theory that matter is a condensed form of interplanetary ether, to which it is gradually returning by slow disintegration, electricity being one of the stages. These views, which are becoming very generally accepted by scientific men, are abundantly illustrated by experiments. The Walter Scott Publishing Co. issue this English edition.

The same company have issued the first collection of New Zealand Verse, written by dwellers in the island. In marked contrast with the Australians, the New Zealanders do not read their own poets; and the compilers have themselves collected this anthology, which is published at one shilling.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 196.)



1. Long-Eared Owl, *Asio otus*, with young Rat (F. R. D. Onslow). 2. Branch of Ivy, *Hedera helix*, showing numerous aerial roots (E. J. Allard). 3. Folded Trap-door Snail, *Clausilia laminata* (J. C. Varty-Smith). 4. Common Sand Star, *Ophiura texturata* (T. E. Belcher). 5. and 6. Winter Gnat, or "Merry Dancer," one of the *Chironomidae* (F. P. Smith). 7. Sparrow Hawk, *Accipiter nisus* (G. B. Norreys). 8. An Early Lamb (W. Reid).

Questions worth Answering.

PRIZES FOR READERS.

WE are giving from week to week a number of interesting questions on all kinds of subjects in keeping with *THE COUNTRY-SIDE*. We invite readers to send in brief answers to these questions; and for the best answer received each week we shall award a prize of five shillings. Below are a number of questions that have reached us from various sources, and the answers given were supplied by readers. They show the kind of replies that are wanted. Answers are invited to the seven questions at the end. No reply should exceed one hundred words in length, but they may be less, and answers each week must reach us by the Monday following the publication of the paper. Address, "Answers," *THE COUNTRY-SIDE*, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to Mr. W. Pratchett, 107, Pembroke Road, Seven Kings.

What effect has the introduction of motor-cars had upon the wild life of the country?

Motor cars raise so much dust, especially in summer, that birds that regularly used to sing and nest near the road, are frightened farther afield. These clouds of dust settle upon every living and dead thing, upon all the flowers and grasses, hiding and spoiling their beauty, and frequently killing the plants themselves.

How is it that such soft things as growing mushrooms can force up heavy paving stones?

This is due to the property known as "osmosis," possessed by rapidly growing cells of absorbing water and passing it on to neighbouring cells. The lifting of paving stones is therefore brought about by natural hydraulics, the combined work of millions of cells of the mycelium in contact with the moist earth.

Why do an elephant's hind legs bend forwards?

The elephant being a flat-footed animal has the thigh and shinbones in somewhat the same proportions as a man and the knee in the same position. In the horse and other hoofed animals the hock which appears as a knee turned backwards is really the heel, the bones below it belonging to an elongated foot. The thigh-bone is short, and the real "knee," which bends forwards as in all animals, is almost hidden in the flesh of the thigh. It is called the stifle joint.

What causes freckles?

The deeper layers of the skin contain a dark brown pigment, which is increased in the parts exposed to the action of the sun's rays. This pigment may be deposited uniformly or irregularly. In the former case bronzing is produced, in the latter the pigment accumulates in small areas called freckles. The ultra-violet rays are the most efficacious in causing increase of pigment, and these rays are to a large extent cut off by the smoky atmosphere of towns; hence the pallor of town-dwellers as compared with the bronzing or freckling of holiday-makers at the seaside.

Why are grasses so widely diffused throughout nature?

Because, in addition to being hardy, independent of insects and carrying the vital parts of the plant underground, the typical grass has a rare combination of advantages in a mat of fibrous roots drawing sustenance from a wide area of ground and pointed upright leaves which push themselves up easily to the air and sunlight between the leaves of competing plants which they overshadow. Thus their neighbours are crowded out both above and below ground; and the grass spreads over wide areas. It has also the great advantage of bristly and scaly flowers which grazing animals dislike to eat.

Why do some leaves undergoing decay turn yellow and others red?

As a result of a reduced temperature in autumn the chlorophyll or green colouring matter of leaves becomes decomposed into two solutions. One is yellow, and the other is bluish-green; this latter undergoes further decomposition into two colourless solutions; hence only the yellow colour is visible. But in the leaves of some plants, owing to the presence of substances in the plant cells of different composition from the above, tannin and the yellow colouring matter are the decomposition products; tannin is reddish in colour, and this masks the yellow solution; hence only red is visible.

Why cannot we see ourselves in a piece of plain glass as well as in a mirror?

Because most of the rays of light which fall on plain glass pass through it, whereas those which fall upon a mirror, that is a glass silvered on one side, do not pass through but are thrown back again at an angle equal to the angle at which the rays strike the mirror and thus give a perfect image. Plain glass will also reflect images, which can be proved experimentally by holding the glass against a dark background, but allowing the light to fall on the person holding it. Plate glass will reflect much better than common, that is blown glass, owing to imperfections of surface and substance in the latter.

Why is it that soldiers in battle frequently lose their hearing?

Why does a peg-top hum less in spinning than a humming top?

Why do sea-shells give a murmuring noise when they are held close to the ear?

Why do the fingers prick and sting when they become warm again after having been cold?

Why have parrots crooked and hard bills, and why can they move the upper as well as the lower bill?

Why are bubbles more easily formed with soapy water than with clear liquid?

Why do the poor and ill-nourished so often dislike fresh air?

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

OTTER, fine female shot in River Brue, near Street, Somerset.—(J. H. Underwood.)

HARRIER (apparently a marsh harrier) seen between Rake and Liphook on the London and Portsmouth Road, January 24th.—(E. R. Bucknell.)

GREAT GREY SHRIKE shot near Birdforth, Thirsk, January 19th.—(S. Cook.) **BRENT GEESE**, **TUFTED DUCK**, **POCHARDS**, etc., are reported as shot from a great number of places where they are seldom seen. Their presence was, of course, due to the severe weather. **BRAMBLINGS** are reported as haunting town gardens in a number of places. **CORMORANT** shot January 30th, and **GREAT NORTHERN DIVER** January 22nd, near Holbeach, Lincs.—(L. M. Curtis.) **YELLOW WAGTAILS**: Although these birds were recorded as seen in three different places in our issue of January 26th, it is probable that grey wagtails, which have yellow breasts, were mistaken for them.

GULLS in hundreds on the playing fields at Eton, January 18th.—(Col. M. F. Ward.)

SWANS flying over sea off Torquay, January 6th.—(C. Wynne-Roberts.)

Early Nests.

ROBIN, with four eggs, at Edmonton, January 22nd.—(E. M. M.) With two eggs at Stockton, January 25th.—(C. Collins.)

Birds' Song.

BLACKBIRD, in full song, January 20th, at Dolgelly.—(Rev. R. Edwards.) [Many more correspondents write to confirm the singing of blackbirds in various parts of England during December and early January, having both seen and heard the birds. Mr. Fred Lawton, Skelmanthorpe, also records hearing and seeing the bird in December, 1900, when other reports of the same thing were published.] **NUTHATCH** calling very loudly, January 30th, Quorn, Leics.—(G. F.) **MISSAL THRUSH**, as well as song thrush, singing regularly from January 4th to 23rd at Southport.—(B. Collinson.)

London Notes.

MALLARDS flying with the gulls near Putney Bridge, January 26th.—(W. A. Todd.)

Marked Birds.

MOORHEN, cream-coloured one seen, January 13th, Waltham, Leics.—(G. Higgins.) **SPARROW**, cinnamon coloured, shot near Nottingham.—(H. C. Smith.) **ROOK** with one leg near Kidderminster during the winter.—(Miss C. Tomkinson.) With right wing and some tail feathers white at Sedbergh.—(D. Ritchie.) **HEDGE-SPARROW** nearly white with brown feathers in wings and tail, legs yellow, killed by a cat near Rugeley, Staffs.—(S. G. Hawksford.)

FROGS' spawn well advanced towards hatching found on January 28th in several frozen pools, 400 feet above the sea, near Helston, Cornwall, January 28th.—(Mark R. Taylor.)

Butterflies and Moths.

CAMBERWELL BEAUTY?—One of my scholars saw a butterfly on January 19th, which from his description of it I took to be "Camberwell Beauty," and when I asked him to find it in a book of coloured flies and moths he at once picked out the "Camberwell Beauty." I cannot vouch for it being so, but the boy was quite positive as to the one he saw corresponding to the illustration.—(W. J. W., Stoke Gabriel, Devon.)

Wild Plants.

BUTTERBUR in full bloom, January 10th, at Bangor, Co. Down.—(C. F. N.) **HAZEL**: Both male and female catkins fully out at Haslemere, Surrey.—(M. Hutchinson.) **WILD STRAWBERRY** in bloom, January 15th, at Garna-villa, Ireland.—(H. G. Miles-Fowler.) **IVY-LEAVED TOAD-FLAX** in bloom January 8th, near Kidderminster. (Miss C. Tomkinson.)

A Naturalist in North Lincolnshire.

(Continued from page 191.)

fields, for some distance around, numerous groups of birds may be seen, walking solemnly in the wake of the plough, eagerly pecking at the unconsidered trifles in the shape of worms, grubs, and insects which the share turns up.

When first they arrive the birds are extremely timid, and take flight at the smallest alarm. Their shyness, however, soon wears off, and their tameness, especially when sit-

and, needless to say, the unfortunate bunnies paid dearly for their distinction. Their extermination, however, came about in indirect fashion. So long as the silver skins were fashionable, their owners were well looked after by the keepers, and enjoyed special protection.

But in the course of time, with the changes of fashion, the skins became no longer in demand. The prime reason for protection ceased to exist, and very soon the rabbits ceased to exist also. Whether any specimens of the breed still linger at Crosby is doubtful, but if so, such are rare indeed.

On Black Rabbit Warren, already referred to, it is supposed there once lived a breed of black rodents. Tradition, however, is less clear upon the subject of these and information as to the period at which (if, indeed, at all) they flourished is not forthcoming. A warren of black rabbits exists, it may be interesting to note in passing, to the writer's certain knowledge, near Edenbridge, in Kent, and they are common in many other districts. Interesting, however, as the vicinity of Scunthorpe may be to the naturalist, it is to the geologist that it offers the most extensive field for observation and research. The district is flat, and, on the surface, sandy, protected by the abruptly-rising ridge of hills, already referred to. Below the sand is a deposit of peat, from three to four feet deep, and under the peat a bed of ironstone, reaching a depth in some places of over fifteen feet.

This ironstone is of great commercial value, and is the cause, as we have already noted, of the blast furnaces which disfigure the otherwise fair face of the country, and which might deceive the somnolent traveller into the notion that his train was speeding through the Black Country, instead of across the fertile acres of Lincolnshire.

Reference must here be made to the "star

one time held in great repute by local superstition, and by other accounts supposed to be identical with the amulets of the Romans and other early inhabitants. As a matter of fact they are the "stars" familiar to fossil collectors as parts of the stalk or arm of a pentacrinus. This creature consisted of a cup shaped body with a crown or arms attached by a stalk belonging to the *Pentacrinidae*, a family of the sea-lilies, or *Crinoids*. The whole stalk is either short, or may reach a length of sixty feet in some species, and is composed of a series of ring-like or pentagonal joints.

The whole group is *Palaeozoic*, its greatest development being in the Silurian rocks. These particular ones are Jurassic ranging from the Trias to the present day.

In view of this scientific statement it will be wiser perhaps to add nothing upon the "star stone's" magical properties.

Space leaves room only—after mentioning the antique and interesting church at Alkborough, the building of which tradition assigns to the remorseful murderers of Thomas à Becket—to refer to the remains of the "Julian Bower," likewise at Alkborough, and said to be one of the only three similar antiquities in the kingdom.

The remains of the "Bower" consist merely of the foundations—cut in the cliff soil—of a maze. Not a stone of the walls is left standing, and speculation as to the purpose served by the original building is speculation only.

That the "maze" could have been designed for amusement the nature of its arrangement and its small limits hardly lead one to suppose. One theory makes it an exercise ground for Monks, though on what grounds we cannot say; certainly such wearisome exercise as it would furnish accords but ill with traditional notions as to the well-fed ease of the early monastic fathers. Its date is likewise a mystery, though probably subsequent to the Roman encampment already referred to, which lies but a stone's throw away, commanding a magnificent view of the great waterways of



Photo.] Sleeping Gull. [Copyright.

ing, becomes astonishing. So crowded are the ponds that the nests of the different birds, "pitches" would almost be a better word, since the eggs are laid on the bare beds of reeds, are so close together as to occupy, it might be said, every available inch of space.

Indeed so great is the demand for accommodation that it is no unusual thing of a morning to find a row of eggs stretched along the narrow plank which serves at one spot as a footbridge, laid by some luckless late arrivals in this comfortless fashion, for want of room elsewhere.

Near neighbours to the gulls of Twigmore, and, in fact, originally an offshoot of that stock, is the colony of birds located on Black Rabbit Warren, just outside of Scunthorpe. Three and thirty years ago, within the memory of an ancient gamekeeper, a few gulls, apparently crowded out of Twigmore, took up their residence at the Blackhead Ponds (as the ponds on the Black Rabbit Warren subsequently came to be known), five eggs being laid during the first season. Since then they have increased in number every year, until the colony bids fair to rival in time that of Twigmore in size.

Very interesting, too, to the ornithologist must be the remains, at Ashby, some two miles from Scunthorpe, of a duck-decoy which once was as profitable as any in the kingdom. Though fallen on evil days, and much decayed, a good deal of the apparatus is yet sound enough to illustrate the modus operandi of the decoyman.

Still may be seen in the thicket, the lake and the "pipes" of the decoy, along which, by the wiles of the treacherous decoy ducks, or the curious antics of the scarlet-coated dog, the inquisitive and unsuspecting wild-fowl were lured to their doom. In the palmy days of this old-fashioned and fast-disappearing industry Ashby Decoy, it is said, used to account for some 30,000 birds yearly.

Formerly Scunthorpe used to boast of a curiosity in natural history quite unique. This was the warren of silver haired rabbits at Crosby, a hamlet on the outskirts of the town. Not so many years ago this peculiar breed was quite numerous, as is abundantly testified locally. Needless to say the skins were in great demand for use as furs and curiosities,



Photo.] Black-headed Gull in full breeding plumage. [J. M. Boyack.

stones" of the Kill Well, or Kell Well, a tiny little stream (reputed of petrifying qualities) that springs from the hillside about midway between Scunthorpe and Alkborough, and trickles down the cliff to the Trent below. These "star stones" flat and five pointed are found in the bed of a stream, and were at

Trent and Ouse, where they meet. We repeat that commonplace and uninteresting as this part of northern Lincolnshire may appear at first sight to the casual "tourist," it yet possesses, for those able to appreciate it, a fascination and charm peculiarly its own.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, FEBRUARY 16, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association. All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application. The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them. All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Flowers of the Forest.

By LADY ONSLOW (OF HENGAR).

It is not always easy without some outside aid to realise past scenes, or departed pleasures, to reconstruct for the benefit of

"That inward eye
Which is the joy of solitude,"

the pageant of summer, the glory of August noontide, while present reality consists of unmitigated winter or rigorous spring. We may know that summer has been, and will come again, that our planet still spins on her path toward more life and warmth, but it would be hard to realise the fact were it not for those tokens Nature provides, in such hardy pioneers as the snowdrop and crocus, aconite and Christmas rose, which declare "earth is not dead but sleeping, and will soon awake. Behold the flickering of her eyelids, her first trembling smile!"

Those who observe and care for Nature's own wildings can testify how, even weeks before snowdrop or daffodil emerged from safe seclusion underground, hundreds of blossoms might have been seen on many a wayside and woodland bush.

Beautiful flowers, too—graceful, pendent, tremulous, or stiffly upright, gleaming in silver or gold, or heavily fragrant with dust of yellow pollen. Long ago, while yet mid-winter, the leafless hazel hung out its pretty pale catkins, "Lamb's tails," the children call them, not inappropriately, as to shape and quivering movement.

Appearing simultaneously on hazel boughs were also other fellow-flowers, crimson, tiny, gem-like, set close against the bark, but in spite of bright colouring these latter are often overlooked because of their insignificant size; catkin-bearing trees bear both male and female flowers, the latter these gem-like florets, not unlike a miniature edition of the embryo larch cones referred to by Tennyson in the line—

"When rosy plumelets tuft the larch."

Everyone knows the bright yellow willow catkins, all over powdery bloom, which, coming just about that time of year, have been for generations past pressed into service as "Palm" for Palm Sunday. They are eagerly gathered for church and home decoration, and many a rustic man and maiden don a spray in honour of the church festival.

Indeed, few flowers at any time of year are more worthy of appreciation. Like youthful debutantes, these catkins on their first appearance are robed in silvery white, which, as they grow and ripen, become enriched with a glory of golden pollen; beautiful and fragrant, and redolent of honey. Choice morsel for the early bee, who doubtless obtains therefrom a rich reward for his energy and timely industry.

The dwellers in rural England all through the dreary months of our dark, damp winter take heart of grace when they behold the willows once more bright with golden blossom. They no longer envy their opulent or luxurious neighbours who fled months ago from northern gloom and fog to the flowers and sunshine of more favoured regions, and, reaching forth wel-

coming hands to grasp these tokens of the long-wished-for spring, console themselves with visions of English primroses for the grey dulness of many a wintry day.

Willows, indeed, it must be allowed, even when laden with fluffy catkins, cannot compare in grace or beauty with the golden-plumed mimosa of the south. But is it not twice as attractive to English eyes? whose love for them often dates back to youthful days, when willow catkins, Lent lilies, and blackthorn, with sorrel and anemone, used to form the chief spoils of a day spent in raiding the woodland.

Ere the march of time has left hazel and willow catkins far behind they are followed by those of the poplar and birch. Perhaps the handsomest of all are the long crimson tassels borne by the black poplars. They look like large, red caterpillars, when, their mission fulfilled, they are shed upon the earth in prodigal profusion.

They can be seen thus cumbering the ground on the pavement of one of London's northern suburbs, where many of the streets are adorned with rows of poplars. It would be interesting, were it possible, to find out how many of the passers-by give any heed to the strange phenomenon, and ascribe it to the stately trees overhead.

Birch trees are full of hanging catkins in April and May, but they are neither so elegant nor so attractive as one would expect the flower of this "lady of the woods" to be.

Besides the catkin-bearers, many more of our forest trees produce flowers, which, though inconspicuous, are interesting, and merit more notice than is usually bestowed upon them. Many people are so unobservant with regard to "common objects of the country" that unless a tree decorates itself all over, with great candelabra-like blossoms, as does the horse chestnut, or becomes a mass of snowy petals, like the hawthorn, the few who consider the question at all hastily conclude our hardy native trees have no flowers.

Yet one of the pleasantest sights in all the year is when about the end of April the elms burst into bloom, when each bare branch

"All turns to bloom,
Though not a leaf is out."

Each lavender grey twig assumes gradually a ruddy tint, till every smallest spray is wreathed with a minute purple inflorescence which soon turns into clusters of green winged seeds, that presently fall in showers on the ground. Thus does the thrifty elm get through all its important work of flowering and fruiting before arraying itself in a gorgeous summer mantle of green leaves.

The flower of the ash, also, comes in advance of the foliage, and is so dark in hue as to appear black in contrast with the light-grey bark.

"More black than ash buds in the front of March," to quote Tennyson again—a most keen observer of such details. These dark-polished tufts of bloom, like those of the elm, soon develop into winged seeds, but they do not in the same way take flight at once to seek their fortune in the wide world; but, on the contrary, cling tight to each parent twig all the summer, and sometimes till after the leaves have fallen. Hanging then in large bunches of "keys," the seeds are very conspicuous, especially if, as occasionally happens, they become towards autumn, prettily tinted with pink.

Did we possess no gardens but our woods; no blossoms but the "flowers of the forest," we should not be so very badly off. First of all, while most gardens are still asleep, would come the catkins on hazel and willow, with snowy blackthorn next, in wind-swept March. Then a regular rush of splendour throughout April and May, with all the fruitful flowers of almond, plum, cherry, and apple, as well as hawthorn, all dowered with such beauty as is bestowed only on earth's fairest children.

Somewhat later velvety green beech and oak blossom, nestling amid the pale young leaves, would not be despised, nor the honey-laden pendants of the great sycamore, beloved by the bees. Horse chestnuts, crimson and white, would be at a premium, and also the scented blossoms of elder and service tree, mountain ash, and white beam tree.

For autumn displays we should have to depend chiefly on berries and bright leaves, on hips and haws, rowan and bramble, with tiny elm leaves golden in decay, plane and maple glowing crimson to their end, and beech with here and there a flaming branch.

Ivy is almost the only denizen of the woods that waits until the close of the year to put on its floral finery.

The Microscope.

Some Insect Wonders.

By H. SCHERREN.

ONE may very well render the technical term "spiracle" by "air-hole," when used with respect to insects. These air-holes are part of the breathing apparatus serving for the intake of oxygen. A good deal remains to be learnt about the respiration, but some things are well-established, and may be verified without

If the upper surface of the abdomen be cut away, it will be seen that these holes communicate with a glistening tubular network, called the tracheal system, by which air is distributed to all parts of the body. A piece of one of the tubes should be picked out and examined under the microscope. It will present the appear-

ing lamps are strengthened internally by spiral wire.

The Clegg belongs to a family of blood-suckers, collectively known as Breeze Flies or Gad Flies. It is included in the genus *Hæmatopota*, which signifies "blood-drinker," and accurately describes the habits of these insects.

They are dingy grey in colour, the prevailing hue having a brownish tinge on the body, and the wings are mottled. In size they are somewhat larger than house flies, and in summer are great pests to people walking in the fields or woods. They alight quietly on the hands or neck, and the victim is hardly aware of their presence till he feels a sharp prick.

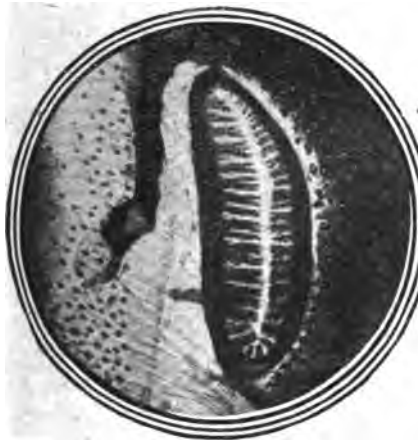
The eyes are very large, as one may see from the illustration. One cannot make out the lancets which inflict the wound, as they are partially hidden by the proboscis, on each side of which the antennæ diverge, and at its base are the palpi.

Before attempting to separate the lancets the beginner should examine a slide, to be obtained at any opticians, in which they are properly laid out. He will then be able to distinguish the weapons for piercing the skin and the suction apparatus by which the blood is drawn up.

The antenna of the cockchafer is an interesting object, which will repay investigation. The fan-like leaves on the club-shaped terminal joints show that this beetle belongs to the group *Lamellicornia*, of which the stag-beetle is the largest British representative; and from their number we conclude that it belonged to a female, for the male has seven.

These leaves are covered with little pits, in each of which is a sensory hair. It has been computed that there are over 5,000 such pits on a single leaf.

The falces, or, as some would say, the mandibles, of the spider may be likened to the jaws. Each consists of two joints, that at the base being short, stout, and armed with projecting teeth; the terminal joint is claw-like, moving freely on the lower one, and forming, with its fellow on the other side, a pair of piercing organs. These are rendered formidable by being pierced at the apex for the outflow into a wound of venom from a gland.



[Photo.]

Spiracle of Water Beetle.

[R. Borrow.



[Photo.]

Head of Clegg.

[E. K. Pearce.

much skill in dissection, with low power lenses.

In caterpillars the air-holes are situated along the sides of the body, and in large ones, such as those of the hawk moths, they appeal at once to the unassisted eye. There is one to each body segment, on each side, none being found on the head. In beetles they are situated on the upper surface of the abdomen, under the wings and wing cases.

Most people know the water-beetle (*Dytiscus marginalis*), a lively inmate of the freshwater aquarium, but dangerous to the rest of the stock from its carnivorous habits and voracious disposition. If one takes a freshly-killed specimen and detaches the wing cases and wings, the air-holes may be seen along the edges of the abdomen on each side. It will also be noticed that the upper surface has a coating of felt-like hair. When the beetle needs to take in a supply of air, it rises to the surface and projects the end of the abdomen above the water. It raises the wing-cases; air flows in and is retained by the felted hairs, and is taken in at the air-holes.

Having once located the air-holes in a caterpillar or a beetle, and examined them with a hand lens or under a low power of the microscope, it will be easy to recognise them in other insects. A lens of half-inch focus should show some of the details in our illustrations (Figs 1 and 3).

These differ, for the reason that the beetle lives in water, which it is necessary to keep out, consequently the openings are small and protected by hairs. In the cockchafer (Fig. 3), these precautions are not necessary, and the opening is much larger. In all cases, however, there is a muscular arrangement by which the orifices can be closed.

ance of being strengthened by a spiral fibre, just as the rubber gas pipes for read-



[Photo.]

Spiracle of Cockchafer.

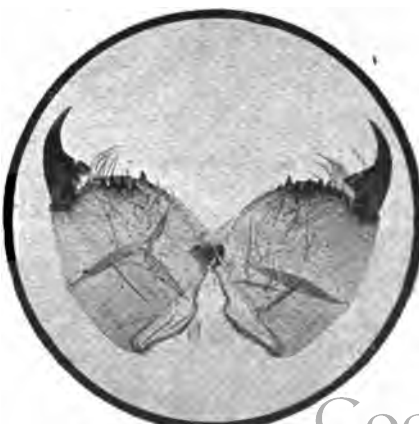
[F. Richardson.



[Photo.]

Antenna of Female Cockchafer.

[F. Richardson.



[Photo.]

Falces of Spider.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

Australian "Nature Cats"—American Harpy Eagle—Brazilian Tanager—Sun-bittern—White Monkey.

VISITORS to the house which shelters such small mammalian fry as the squirrels and mongooses will note the pair of Australian "Nature Cats," or *Dasyures* (*Dasyurus viverrinus*) with interest, as there have been no opportunities of seeing these creatures of late.

Cats they are not, of course, but carnivorous marsupials, and in appearance are rather like big rats than cats, as far as gait and shape go. Their coat is very peculiar, light brown with big white spots—a pattern one usually associates with the deer family.



Photo.]

[W. S. Berridge, F.Z.S.]

The Sun-bittern and the White Monkey recently added to the London Zoo.

These creatures are good climbers, omnivorous in habit, and great enemies to poultry and other birds; in fact, they play in the marsupial order the part of the martens or the treecivets among the true carnivores, much as the American opossums also do.

There has been a notable personage received at the Eastern Aviary in the shape of the celebrated Harpy Eagle (*Thrasaetus harpyia*) of tropical America. I can only remember having seen this bird at the Zoo once before, and that was many years ago. It is a very remarkable

species, shaped more like a goshawk than an eagle, with short broad wings and enormously powerful legs.

The plumage is grey, light on the body and dark slate on the quills, and is soft in texture, and forms two crests on the head, giving the bird a somewhat owl-like look. The harpy is seldom seen, and is reported to be a most ferocious bird, killing animals much superior to itself in size. The ancient Mexicans used to train it for falconry, as modern Tartars do the golden eagle.

Another American bird that deserves notice is the superb Tanager (*Calliste fastuosa*), of Brazil, a bird which has not been visible at the Zoo for some years, though often in the hands of amateurs. Now there are a pair in the Insect House, and they are certain to attract notice.

In size and form closely resembling the humble house-sparrow, these little gems are gorgeously clad in metallic sea-green and violet, jet black and flame colour. They are not at all difficult birds to keep if given plenty of fruit and some good "soft food," and will live in an ordinary sitting-room given a big cage sheltered from draughts. Among the British birds the accession of specimens of the Long-eared Owl deserves notice.

The accompanying photographs represent the Sun-bittern, acquired some time back, which now has got into perfect condition of plumage, and has a companion; and a curious white monkey which has been for some months on view in the Monkey House. It is ranked as a distinct species, but is, it seems to me, more probably a partial albino—the albinism is not complete, as the eyes are not pink.

Long-Tailed Murderers.—Pheasants have frequently, says Mr. C. C. Rogers, been known to kill both field voles and frogs.

The Blackcock's "Brake."—The blackcock has the most wonderful power of turning in an extremely short space, even when going fast down wind.

The Moorhen's Nest.—The nest of the moorhen is, although generally built in rushes on the water's edge, not infrequently found 20 feet or more above the ground.

Kestrel as Fisherman.—Several more or less well authenticated reports are on record of kestrels having taken living fish from the surface of the water.

The Snipe's Bleat.—The drumming or bleating of the snipe was well known to Tennyson, who describes it thus: "The swamp, where hums the dropping snipe with moss and braided marsh-pipe."

The Flying Fish.—The flying fish seldom flies for more than 100 yards at one flight. The fish flies until its wings become dry, which generally happens in about 600 yards; a slight dip will enable it to continue for another 20 yards.

The Great Tit's Song.—Some gardeners translate the triple sounded note of the great tit into "Set your beans," having probably noticed that the time for this operation is concurrent with the first spring call of the "ox-eye."

Astronomy.

The Moon—Ring Mountains—An Occultation—The Planets.

By Norman Lattey.

The Moon.

THE moon will be very conveniently placed for observation during the latter half of this month. "New" occurs on the 12th, at 5.43 p.m., and from that time until "Full," on the 28th, every formation on the visible disc can be viewed under sunrise conditions, or, as it is usually termed, "morning illumination." In other words, the long lunar day, extending over fourteen of ours, will have run its course. After Full Moon the light of the sun will commence to draw off from the crescent which we first saw as "New," and the same features can be then seen under "evening illumination."

Ring Mountains.

Even a very small telescope will suffice to reveal undreamt-of wonders to those who have never examined our satellite with anything more powerful than a binocular. The curious ring formations and rugged mountain ranges, startling in their terrestrial resemblances, will provide an ever-changing panorama each night to the possessor of such an instrument if the weather be favourable. The telescope should, however, be provided with an astronomical eyepiece magnifying not less than forty diameters, and it should be borne in mind that in such circumstances the image will always be inverted.

An Occultation.

On the 23rd inst., when the phase is about midway between "First Quarter" and "Full," the moon will pass over the fairly bright star Zeta, in the constellation Gemini (The Twins). The disappearance will take place at 7.11 p.m. Greenwich time behind the dark edge of the disc, and the star will reappear on the bright side at 8.29 p.m., rather over an hour later. This star is really double, with a small companion, which can be glimpsed in a telescope of comparatively small aperture. It is also regularly variable in its brilliancy, the light fluctuating slightly over a period of about ten days.

The Planets.

Of the planets, Jupiter is, of course, the most glorious, and will be very noticeable not far from the moon. Venus is a morning star, rising about two hours before the sun. Seen through a telescope, she looks like a miniature crescent moon. Neptune, the most distant planet in the Solar System, may be picked up as a minute point of light in the neighbourhood of Jupiter, but has no interest for the amateur star-gazer. Mars and Saturn are for the present practically invisible, but towards the end of the year will be the two great attractions of the sky, the former on account of its earth-like markings and the latter owing to the remarkable phenomenon of being apparently divested of its wonderful rings.

The enlargement of "The Country-Side" is permanent. Please introduce the Paper to your friends.

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POULTRY.

POLISH FOWLS.

ONE of the prettiest and most attractive of our ornamental breeds of poultry is the stylish Poland.

The chief feature of the beautiful and noble Polish fowl is the shape and size of its crest, a large bushy mass of feathers, which almost appear to incline backwards.

Although this breed strictly does not possess a comb in addition to its crest, close inspection will reveal traces of two miniature horns, in fact similar to the French breed Crèvecoeurs.

An examination of the skull of this pretty fowl will prove that the top portion has a strange spherical protuberance, as shown in the accompanying sketch.

The head points, including the handsome crest or top-knot, as I so often hear it called, is not the only attraction of Polish fowls, for it may be safely stated that their plumage will vie favourably with any variety of the feathered tribe, for a selection may be made from the following colours:—White-crested, black, silver spangled, or golden spangled.

I consider that the white crested Poland is the most admired of all the crested race of fowls, and rightly so, for its plumage is a rich lustrous black, without a trace of white in any portion of the body, whilst its head is adorned with a lovely crest of pure white feathers, giving it a majestic appearance.

In this variety the crest is, of course, the all-important desideratum, and fanciers each year persevere in their efforts to obtain it as pure in colour, as large in size, and as even in shape as possible. It is essential that the male bird especially should be well equipped in this respect, as his influence is far greater on the chicken than that of the hen bird.

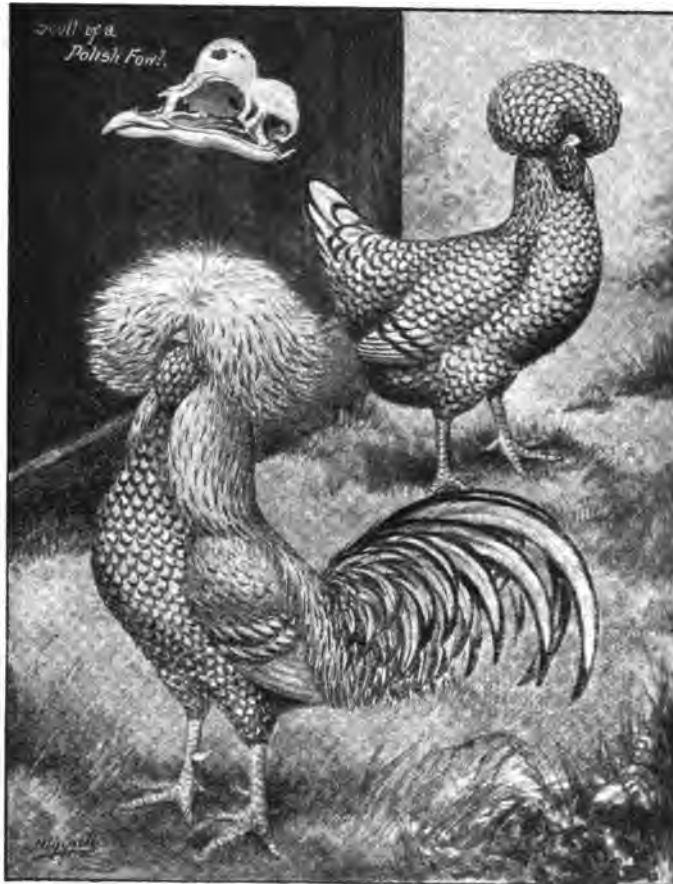
In front of the crest a few black feathers will be seen, which tend to show off to decided advantage the silvery white feathers above. The wattles are very long and pendulous, the ear-lobes large and white. The cock has a most sprightly carriage, and invariably attains from seven to eight pounds in weight. The tail is carried a trifle high and is very full and flowing, which improves the appearance. The legs are shorter in length than those of other varieties, the colour being dark blue or black.

Black Polands are similar to white in style and shape, and differ only in the colour of the crest, and in the fact that they are inclined to be smaller in size. Silver-spangled Polands are extremely pretty

fowls, but are not so popular as I should like them to be.

I find they breed true to colour if good stock is selected in the breeding pen. The ground colour is a clear silvery white, as in the Hamburg fowl; the markings display a brilliant metallic black.

The crest is longer than that of the white variety, the feathers falling over the head in great abundance, almost hiding the face, and each feather being regularly tipped at the end.



Silver Polish Fowls.

One of the prettiest of our ornamental breeds of poultry.

The general plumage of the body is marked, even to the thighs and fluff. The spangled Polish fowl differs from the white-crested, inasmuch as it possesses in place of wattles a choice thick spangled beard, giving the breed a very remarkable appearance.

The gold-spangled, with the exception of the rich bay, forming the chief colour, is very similar to the silver variety, the colour being a trifle brighter than that seen in most gold plumage fowls.

In mating up a pen see that all birds have clear coloured tails, especially avoiding all white tail feathered birds, also observe the colours, which should be bright and lustrous, whilst the crests should be full and globular.

The best time for hatching is April to June, and it is wise to have the run on a dry sandy soil, for dampness is fatal to both young and old Polands. From an early age the crest feathers of the chickens must be kept closely cut until the end of

the summer. The crest cutting in fact is necessary for all birds of this handsome breed, especially when required for exhibition.

The male bird in the breeding pen must of course be deprived of his head adornment or unfertile eggs will be plentiful.

DOGS.

The Value of Dogs—Clubs and Shows—£1,250 for a Collie—Fashions in Dogs—An Excellent Idea—Various Notes.

The Value of Dogs.

THE extraordinary discrepancy in values of dogs was exemplified at Aldridge's sale last week, and goes to prove that the really useful working dog is not esteemed commercially, for no dog fetched a higher sum than 5 guineas, while Pointer and Spaniel puppies failed in many instances to realise even the nimble shilling. The show dog or puppy that could not bring £5 to its owner would be hard to find, and if found would certainly be diseased, which only goes to exemplify that in dogs, as in business, it is not always the industrious worker who makes the money, and, further, that, given good looks, a dog may romp into a banking account, to say nothing of Imperial honours.

Clubs and Shows.

The Ladies' Fashionable Ladies' Kennel Association Open Dog Show takes place on June 25th and 26th, and their ordinary Members' Show on April 9th.

Ever since H.R.H. the Duchess of Argyll was known to favour the White Rose-neath Terrier, and Lady Angela Forbes founded a club on its behalf (subsequently termed White Scottish Terrier), there has been a gradual popularizing of this variety. Now many ladies are working actively to promote the interests of what is really a very charming, clever, companionable house-dog. Lady Aberdeen quite recently was photographed with one of them, and the Hon. Mrs. Lascelles is devoted to her kennel of the variety, which already has made its mark in the show ring.

A Miniature Toy Bull Terrier is the latest specialist club to spring into being and is announced this week by Mr. Temple, whose name is familiar as judge and owner of foreign dogs and Chows. The latter, having a separate number on the Kennel Club register, is given the distinction of its personality, while many other beautiful varieties such as Slughis, Elkhounds, etc., are classed under the one word "Foreign." The ladies who are foremost in pushing the fortunes of the new Toy Bull Terrier Club are Lady
(Continued on page 204.)

Evelyn Ewart and Lady Decies, both of whom have exhibited the white toy bull terrier for many years.

£1,250 for a Collie.

A sensational sale of collies took place last week, Mr. Mason, of Stockport, having sold champion Squire of Tytton to Mr. S. Untermyer, of New York, for £1,250.

Fashions in Dogs.

Fashion in dogs is rather neutral at the moment, for most breeds which have earned their notoriety the past few years through sensational sales, beauty or excellence of breeding and inbreeding, hold their own still, and no new ones have taken their place.

The newest favourites are the Slughis in big dogs, and the smaller, Tibetan Spaniels, the latter, of course, marking the Ameer's triumphal progress through India. But these breeds are so few in number and ownership, that a furor in their favour can hardly be expected until after a year or two of successful breeding by those who at present possess such varieties.

The Great Dane is holding its position, and what is fortunate for those who indulge in the luxury of keeping an expensive breed, the Dane is maintaining its price, and even Germany can boast of a specimen for which its owner has refused the large figure of £850. Mrs. Horsfall, who has done so much to popularise the breed in England, has now a field of rivals, and there is perhaps to-day no big variety of dog quite such a favourite as is the Great Dane, an admirable companion for girls in their lonely walks in country lanes.

In lap or toy dogs the Brussels Griffon is a very charming variety. The breed has distinct intelligence, is smart, and carries an attractive coat, with a fascinating perf face. The Pomeranian, known here pretty generally as the "Pom," is another pleasing toy, but vastly stronger in numbers than the little "Grif." Almost one in ten of the small dog lovers owns a "Pom"; their appearance is so aristocratic and they can be bought, so to speak, of any colour. The big cheques, however, still lie in the direction of Pekinese, whose circle of worshippers promises to become as vast as the Celestial Empire.

An Excellent Idea.

Many poor old men and women pass their lives with no other companion than their four-footed friend, and were they deprived of their dog their old age would lose all the brightness possible in it. It was therefore a happy inspiration which made Mr. Cole, of the Dumb Friends' League, found a fund for the purpose of paying licences for those men and women whose want of means prevents them from complying with the Act. Surely the tax might be remitted in such cases, and just as the law allows a farmer to keep a watchdog free of tax so it should permit one dog to old people living solitary lives.

Various Notes.

Bolton Show, on the 16th inst., is giving 25 classes for fox terriers, the judge being Captain Gerard Clay.

The Kennel Club Stud Book, Vol. xxxiv., is just issued by Mr. Jaquet.

Miss Cresswell has been writing to

"Our Dogs," pointing out that even in 1796 there were sporting doggy women. This information she discovered in "Gurney's Birmingham and Stafford Chronicle," and her extract reads as follows (date February 4th, 1796):—

"Miss Pickering has the best breed of greyhounds in England. She has offered to match her favourite brace for £1,000 against any that can be produced. Colonel Thornton is the only gentleman who will hazard a contest with the fair sportswoman."

CATS.

WHITE CATS, whether long or short haired, have some peculiar characteristics. They very often have odd coloured eyes, one green and the other blue, and they are very frequently stone deaf. This defect is most noticeable when both eyes are blue. High prices are given and asked for white cats with sound hearing.

There is a common superstition that it is unlucky to weigh a cat or kitten, but nevertheless it is a very useful way of finding out if your puss is in good health. A kitten should weigh about a pound a month up to six or seven months old.

Persian kittens are often troubled with weak eyes, especially if born in the colder months of the year. A capital lotion can be made by mixing one ounce of boracic powder in a pint of boiling water. Put this in a bottle, and when needed mix again about one ounce to one ounce of tepid water. An easy and effectual way of dropping the lotion into the kitten's eye is to saturate a piece of cottonwool and then squeeze it.

CAGE BIRDS.

The Keeping and Breeding of Canaries.

QUITE the most popular branch of this hobby is the keeping and breeding of canaries. Few indoor hobbies are more generally interesting than this, and it is so pliable or adaptable to circumstances and means as to be within the scope of practically everyone. Thus the poorest peasant may quite successfully manage and rear a stock of common canaries, whilst the breeding of high-class birds suitable for exhibition at bird shows is a pastime not despised by the owner of a fat purse.

This is not implying that the poor man or woman cannot breed good quality birds. Quite the contrary is the case, and many a fine bird that has changed owners for a consideration of several crisp banknotes has been bred by members of the working classes. What is required is a good judgment and skill in mating together birds to produce the necessary show points looked for in that particular breed. Given this, and a little foresight, the possession of a deep pocket is quite immaterial to success.

But this is only by way of preface. The would-be canary breeder must first of all procure a few needful appliances, and as a few weeks must still elapse before he should think of mating any birds together the interval may be occupied in getting these in good condition. A proper breeding cage should be regarded as essential, as they are so much more convenient than any kind of makeshift

article. They are of two kinds—the single and double. The former will measure about 20 inches by 16 inches by 11 inches, and the latter will be about twice the length, and the same height and width, with a partition in the middle dividing it into two compartments. A portion of this partition is made to slide in and out, so that the bird may pass from one compartment to the other. A double cage devoted to each pair of birds has many advantages over the single type, and so the latter should only be adopted where space is too limited for the use of the larger type.

If not quite new and freshly painted inside and out each cage should be given a good dressing with sanitary distemper all over the inside so as to make it clean and uninviting to insect pests. This is an important point to consider as its neglect may cause one much annoyance later on in the hot summer months, when canaries, as well as other cage birds, are apt to be much troubled with red mite—a little red, blood-sucking pest that is often the unsuspected cause of many ills to which bird flesh is heir.

A nest box or nest pan, which can be bought in various patterns of almost any seedsman, and a piece of cuttlefish bone are necessary fitments for each cage. As regards the former, the old-fashioned square wooden box to hang on the end or back of the cage, generally known as the Norwich nest box, is as good as anything.

As already said, it is yet much too soon to actually begin mating birds, therefore it goes without saying that nothing in the way of nesting material should be put within their reach, nor any encouragement given them to start to breed. The losses arising every year from too early mating are enormous. We shall point out when the proper time arrives, and even the raw novice should, by following this advice week by week, secure a fair amount of success.

The beginner should, however, act upon this hint forthwith: lose no time in buying any fresh birds that are required, particularly if they are hens. It is always best, for reasons we cannot here go into, to procure fresh stock before March—after that date be chary of buying fresh stock for breeding.

Cycle-Camping.—The annual "Camp Fire" of the Association of Cycle Campers will be held at the Lecture Hall, Challoner Street, West Kensington, on Saturday, March 9th, instead of March 2nd, as notified.

"The Beagler Boy."—This is a journal conducted by Old Etonians for the express purpose of repelling the attacks which have been made upon the practice of hare hunting at Eton. It is a curiosity in periodic literature—indeed, one can hardly call it "periodic," since the conductors announce that its publication will be "irregular." It is clever and strenuous, but, of course, *ex parte*. Published by A. C. Fifield, 44, Fleet Street, E.C., price 2d., post free 2½d.

Early Birds.—As evidence of the effect of the "abnormal mildness of the season" on the birds a humorous reader sends the following cutting of the *Daily Telegraph* of January 29th:—

PARTRIDGE.—On the 26th inst., at 11, Inglewood Road, N.W., the wife of Harold A. Partridge, of a daughter.

SPARROW.—On January 27th, at "Lynton," Priory Avenue, Hornsey, N., the wife of Maber C. J. Sparrow, of a son.

Amateur Photography.

THE ELECTRIC RELEASE.

By W. ROBINSON SMITH.

In a former article on this page we gave a plan for the composition of a simple hiding tent to enable a photographer to obtain a picture of a bird on her nest. It is now proposed to give a few ideas which may enable the photographer to dispense to some extent with even such a simple contrivance.

Although it may be possible to remain in hiding oneself, it is evident that if one can control one's camera from a considerable distance it must be far more convenient to conceal the smaller bulk of the camera than the larger bulk of the camera plus the photographer. There are two ways, or rather two principles, along which such control may be applied. The first is the mechanical which is to have a long tube instead of the familiar short piece connecting the air-ball with the shutter. A variation of this is to apply the well-known Bowden brake principle, but this is so expensive as to be almost prohibitive. In both these methods the difficulty is only partially elided, as there is a very obvious limit to the length of tube which can be employed, and the results are on the whole by no means as uniform as could be desired.

There remains then the second method which is the application of electrical power, in the same manner as it is employed in the construction of an electric bell.

The advantages of this method are numerous; it is inexpensive; distance is no longer a recognisable quantity—it would be as easy to take a photograph when a mile distant from one's camera as it would be to take the same picture at twenty feet.

Personally, I never carry more than eighty yards of wire, this, of course, doubled so that the distance cannot exceed forty yards, and yet I may say that seldom indeed is it that I have had to uncoil all of this, comparatively short, stretch of wire.

The simplest form in which this release may be used is shown in the first of our illustrations, which is a drawing of an old-fashioned india rubber band shutter.

It will be understood that upon the catch or trigger "A" being drawn back the shutter is put in motion and the photograph taken.

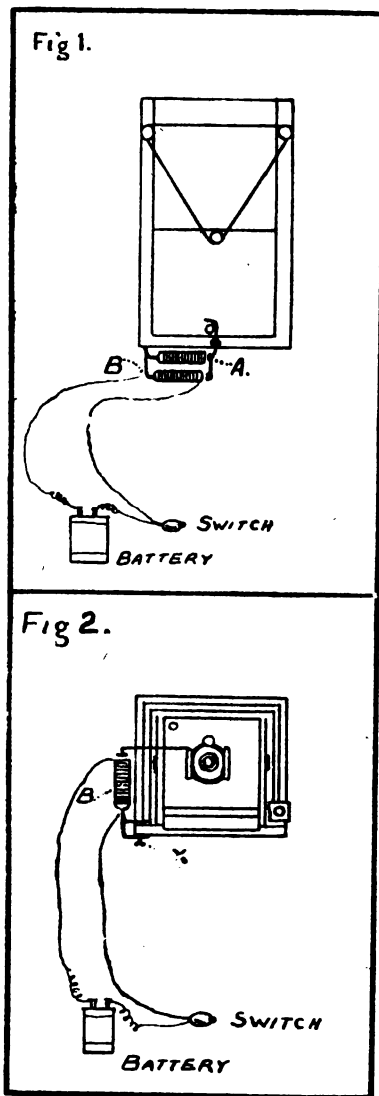
"B" is an ordinary electric bell magnet. When a current of electricity is sent through the coil on "B" it instantly becomes a powerful magnet and pulls the trigger "A" towards it which releases the shutter. To this trigger, if not already made of iron (as a rule they are stamped out in brass or gunmetal) a small piece of soft iron must be soldered or fixed in the most convenient manner.

There are so many kinds of shutters on the market that perhaps some of our readers may think that every camera should require a differently constructed "release." This is not so. However many different makes of shutters there may be, there are practically only two in use, to any great extent, in this year of grace 1907. The Thornton Pickard type and the automatic cylindrical type. It is

understood that we are dealing with focussing cameras only.

One of the two different sketches in our illustration anyone ought quite easily adapt, or, at any rate, have adapted to his own particular camera.

Take for instance the well-known Sanderson cameras, all of which are fitted with the automatic cylindrical shutter, which is shown in our No. 2 sketch, which is explained as follows:—The magnet is clamped to the baseboard of the camera at "X," and the thumb-press on the



Diagrams illustrating the kind of Electric Release that may be adapted to any Camera.

camera is produced to meet the magnet "B" with a piece of soft iron, as in our illustration.

While here let me say that while I hold no brief for the Sanderson Camera Company, if any reader wishes to invest in a camera for the coming nesting season the Sanderson is far and away the most suitable for all outdoor natural history work as understood by the writer.

THE BATTERY.—Any battery will do to send the current along the coil. Perhaps the most suitable form in which to carry power is in an accumulator. A con-

venient pocket accumulator may be purchased or made for a few shillings. This is certainly the most powerful and least bulky of all batteries, but at the same time it requires very careful handling, and unless the enthusiast lives in or near a town where he can have it recharged from time to time I advise the use of three small dry batteries coupled together which will give very satisfactory results and require no attention.

The appliance of the apparatus will be better understood by a glance at our illustration than by many voluminous paragraphs of mine. The circuit is broken at the button, which is an ordinary electric bell button.

Let me just add that if this be shown to an electrician he should have very little difficulty in supplying an outfit to suit any particular camera for a very moderate outlay.

Some further notes on this subject will be given next week.

Breeding Haunts of the Solitary Sandpiper.

By W. P. Pcraft.

SOME extremely interesting facts concerning the nesting habits of the solitary sandpiper (*Totanus Solitarius*) were brought to light at the last meeting of the British Ornithologists Club.

The breeding haunts of this bird were first discovered in 1903 by Mr. Evan Thompson, in Northern Alberta, N.W. Canada. The three sets of eggs which he took on the occasion of this discovery were exhibited to the members of the club, a rare privilege, since these specimens are the first yet seen in Europe. The solitary sandpiper, it seems, like its European relatives, the wood and the green sandpiper, has adopted the curious habit of depositing its eggs in the old nests of other birds, choosing those at some distance from the ground.

Of the three clutches just referred to, one containing the abnormal number of five eggs was found in an old nest of the American Robin (*Turdus migratorius*). Another clutch, incomplete, represented by two eggs only, was taken from the nest of Brewer's "Blackbird" (*Scolecophagus cyanocephalus*), placed in a tamarac tree, about five feet from the ground. The third clutch of four, was also found in the nest of the American Robin, placed in a tamarac tree fifteen feet from the ground.

Mr. Thompson finds that occasionally the sandpiper is indiscreet enough to select for the deposition of its treasures, a newly made nest, and as a consequence the eggs are promptly ejected by the builders. In other cases, as if unsatisfied with the furnishing of its adopted nursery, the bird will add a lining of lichen.

This wary bird has chosen wisely in the selection of its breeding haunts, selecting the swampy woods known as the "muskegs" of N.W. Canada (Alberta). The soil here, at about one foot or eighteen inches from the surface is solid ice, which does not melt till the middle of June, or later, when these swamps become impassable. For further security it selects, as the site of its nursery, a tree containing a nest with an open outlook, and always on the outskirts of the forest, so that it can slip off unobserved when alarmed.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page v.) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

"Robin at Home."—I do not think it at all likely that the robin will nest in a nest-pot which is close to the bird-table where other birds feed. It should be placed a good distance off.—(to J. J. SNOW.)

The Nightingale's Season.—Between April 28th and May 21st is the best time for hearing the nightingale in full song.—(to ANGLO-CELT, Dublin.) (See "Country-Side Notes.")

Birds Identified.—The large dark bird of prey with a white mark above the tail, quartering a field for game, was probably a marsh harrier. This quarters the ground and has white upper tail coverts.—(to E. P. S.)

The brown birds which looked something like young ducks and were very active in diving were dabchicks.—(to Novice, Norwich.)

Caterpillar Identified.—The large velvety black caterpillar with golden-brown hairs on the back, which is found abundantly on herbage in late summer, is that of the fox moth.—(to L. ATTWATER.)

Migration of Jackdaws.—All jackdaws do not appear to migrate; but a very large migration takes place, and they arrive by thousands on the East Coast in autumn. So far as British jackdaws are concerned, my belief is that the migration is confined to young birds of the year.—(to R. M. RENTON.)

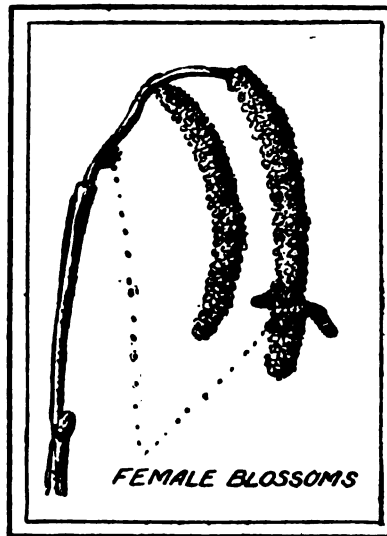
Feeding a Mongoose.—A mongoose is an easy animal to feed, as it is practically omnivorous, though it should always have a good proportion of raw animal food. Give it bread and milk or porridge and milk with a sparrow or two, a good piece of rabbit, a fowl's or duck's head or a meal of minced raw meat daily; also banana and any other fruit it will eat. Eggs it will greatly relish and amuse you by its clever way of cracking them. See that it has clean drinking-water in a vessel it cannot upset. You should continue to put down some food for it when you turn it down to kill the rats, but then give it no meat, etc., so as to encourage its desire for blood. But take care it cannot get to poultry or rabbits.—(to "RATS.")

Axolotls Breeding in Captivity.—The axolotl so regularly reproduces in captivity that it can be fairly ranked as a domestic animal; indeed, there is a white variety commonly seen. Very possibly, as you suggest, in the warm reptile house the season does not matter. The animal comes from a warm climate, being found in Mexico.—(to EDWARD TANNER, Wernwood Scrubbs.)

Book on Birds.—Of the "not-too-expensive" books on British birds, assisting the beginner to identify them and to learn something of their habits, perhaps Howard Saunders' Manual of British Birds is the best. W. J. Gordon's "Our Country's Birds" is cheaper and gives a coloured picture (not always good) of each kind. Bowdler Sharpe's Handbook of British Birds in four cheap volumes (if still on sale) is the most comprehensive. There is also a handy little book, "A Ready Aid to Distinguish British Wild Birds," by David T. Price, which is useful to beginners.—(to M. G. MOORE.)

Companions for Jackdaw.—With birds of the crow tribe your choice is practically limited to the jay, magpie, and rook. Whether the magpie would be possible only experience can show as individuals vary much in temperament. The Cornish chough would make a nice addition, but its rarity and local occurrence might preclude it. A nutcracker might also have been added, but it does not breed here. A starling, which is nearly related, might do well if the magpie was found impossible. The remaining members of the crow tribe—raven, carrion crow, and hooded crow—are not to be thought of in this connection.—(to NORMAN FOSLAND, Bromley.)

Abnormal Catkins.—It is not very unusual to find hazel catkins which branch out and produce minor catkins; but I do not recollect a case in which female blossoms, ordinarily



Abnormal Hazel Catkins.

produced on another part of the twig, thus appeared on a male catkin.—(to Miss C. A. COOPER.)

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

*All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

SPECIAL ADVANTAGE FOR MEMBERS.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 56, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

Expert Wanted.—Is any member able and willing to answer questions concerning and identify specimens of the Poduridæ or "spring-tail" insect family?

B.E.N.A. Fund.—Amount previously acknowledged, £14 19s. 1d. Since received:—1s., W. E. Avery; 5s., Leonard C. T. Benjamin; 4d., F. Walker; 1s. Miss A. Stone; 1s., H. E. S. Hatton. Total—£15 7s. 5d.

Branches of Affiliated Societies.

IPSWICH BRANCH.—At the last meeting Mr. C. Palmer and the hon. secretary gave notes on birds and bird-tables in winter, early migrants to look out for, etc. Mr. A. Wilkinson again kindly lent the room and supplied refreshment. Three new members enrolled. Next meeting February 18th. Hon. secretary, Mr. Cecil H. Lay, 14, Silent Street, Ipswich.

HULL AND DISTRICT BRANCH.—Nine new members enrolled since the formation of this branch. Hon. secretary, A. J. Moore, 9, Brook Street, Hull.

HULL JUNIOR FIELD NATURALISTS' CLUB.—Next meeting, February 8th, in No. 11 Room, Oddfellows' Hall, Charlotte Street. Mr. M. Ling will lecture on "Extinct Animals"; Mr. Quick from South Africa will exhibit specimens; Mr. R. J. Porter, F.C.S., president, in the chair.

SEVENOAKS AND DISTRICT BRANCH.—Mr. Fred W. Crothall, Seal Chart, Sevenoaks, who already identifies butterflies and moths for West Kent, has undertaken the work of hon. secretary for this district, including Seal Chart, Stone Street, Ivy Hatch, Ingham, and Plaxtol. He will be glad to hear from intending members.

DULWICH BRANCH.—The first meeting was held at the hon. secretary's house on January 26th. All present were greatly interested in a collection of natural history specimens exhibited, and in an address on "Nature" by the hon. secretary, Mr. J. Acutt, 114, Upland Road, East Dulwich, S.E., who will be glad to hear of new members in the district before the date of the next monthly meeting.

LOUGHBOROUGH AND DISTRICT, LEICS.—Messrs. W. Salisbury, 25, Cambridge Street, Loughborough, and G. Frisby, Quorn, are acting as joint secretaries for this district, for the purpose of organising local gatherings, excursions, lectures, etc., and will be glad to hear from local readers of THE COUNTRY-SIDE who desire to become members.

ABERDEEN JUNIOR CLUB.—Will any readers between the ages of 15 and 18 who would like to become members of this club, as a branch of the B.E.N.A., send their names and addresses to Alexander G. Philip, St. Helen's Villa, 56, Erskine Street, Aberdeen?

Calvary Clover.—The offer of seed pods is still open to any B.E.N.A. member who cares to send a stamped and addressed envelope to Mrs. Clarkson, Alpina, London Road, High Wycombe.

B.E.N.A. Museum.—Several members have urged the establishment of a travelling B.E.N.A. museum. "I am endeavouring," a member writes, "to collect for the B.E.N.A. specimens of natural history of any kind and have written to friends in various parts of the country and also Canada and Australia." May I say here that this is an example which might well be followed by others? Although the travelling B.E.N.A. museum will not be in existence to-morrow or next week, I think that it will surely come; and members who begin now to collect specimens for it will be helping to make it an assured success from the start.

Exchange of Specimens.—Before another collecting season arrives it may be well to remind our secretaries of exchanges to use such opportunities as they may have to prevent rare or local species from being endangered. They should refuse to effect exchanges in the case of creatures or plants in danger of extinction. In order, also, to maintain this amount of control over the exchanges they should, as a rule, take care not to make the parties known to each other.

"DAILY MAIL"
The Naturalist's Daily Newspaper.



The Garden.

New Chinese Plants.

ONE of the pleasures of the garden is the opportunities it affords for making the acquaintance of new and interesting plants. Old favourites never fail to give delight, but they are like old friends, we know them and all about them; they lack novelty, surprise, and instruction. To add a new plant to one's

permit us here to do more than mention a few of them. The trees and larger shrubs must be taken generally on trust, but the botanist knows from dried specimens that many of them are more than likely to prove valuable acquisitions in British gardens.

There are magnolias, stuartias, brambles, acers, vines, cotoneasters, deutzias, viburnums, poplars, limes, oaks, and *Davidia involucrata*. The last-named is a remarkable tree of pyramidal form, 40 feet high, with large green heart-shaped leaves and large white flower bracts, giving it an extraordinary appearance. *Magnolia Delavayi* is a hardy evergreen with large egg-shaped white flowers. *Vitis lecooides* has large pinnate leaves, glossy green above, and deep claret purple beneath. *Viburnum rhytidophyllum* is a shrub, ten feet high, with large velvety-looking leaves and big corymbs of yellowish white flowers.

Rhododendrons have hitherto been considered most abundant in the Himalayas, but it is now known that the headquarters of the genus is in China. Until recently we knew very few of them, and

only three, viz., *R. Fortunei*, *R. sinensis (mollis)*, and *R. indicum*, had a place among popular garden plants. The last-named, when first introduced about 100 years ago, was said to have come from India, but it is now known to be peculiar to China. About 20 years ago the French missionary Delavay succeeded in introducing several beautiful species from China, such as *R. racemosum*, *R. Delavayi*, *R. yunnanense*, etc.

Wilson, however, was the first to open our eyes to the richness of Chinese rhododendrons. They clothe the highlands of the

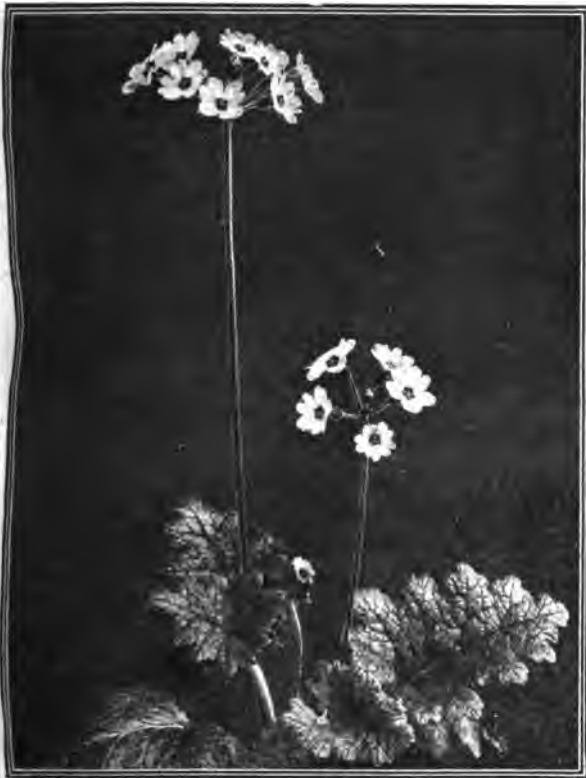
north-west in the same way as heather does our hills and moorlands. Some of them are small, like the Alpenrose; others form huge bushes, almost trees, and there are all sizes between. Wilson succeeded in getting home to Chelsea seeds of a large number of species. So far, these have all proved hardy, and although they are not yet large enough to flower, their behaviour under ordinary treatment is all that one could wish.

Jasminum primulinum is unquestionably the handsomest of all yellow-flowered jessamines. The best way to grow it is to plant it in the open border from May to October, when it should be lifted and placed in a cool house or shed, to flower under glass in early spring. Treated in this way, we have grown it into fine bushes, which in February were covered with bright yellow semi-double flowers 1½ inches across.

Buddleia variabilis is quite a magnificent flowering shrub, which has long green leaves, and closely packed branched racemes, sometimes a yard long, of purple flowers.

The shrubby spiræas have a much greater value for the garden than many people appear to recognise. They grow well, and flower freely in ordinary soil, and when in bloom, usually in June, they are bright and attractive. Some good, showy species have recently been obtained from China, and we can strongly recommend *S. Henryi* and *S. Veitchii*.

(Continued on the next page.)



[Photo.]

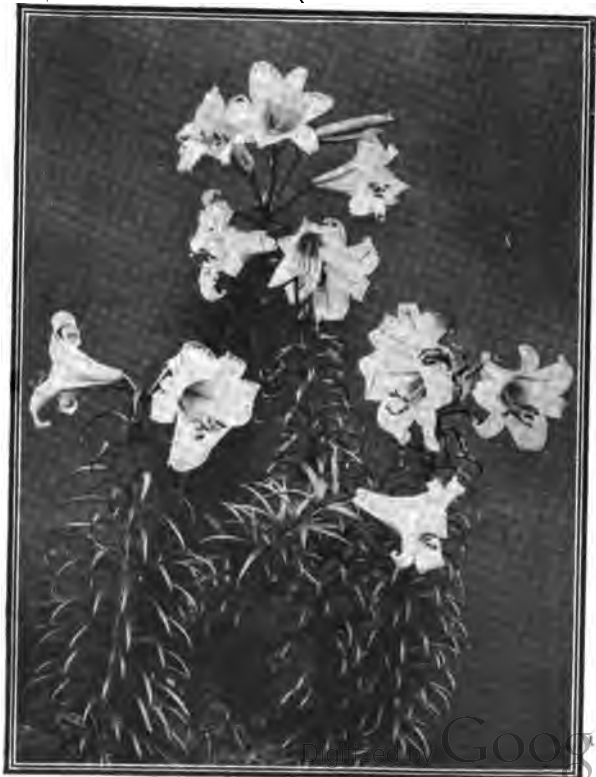
[Copyright.]

Primula Veitchii.

garden is like forming a new friendship. But new plants may be wanting in those characters which give pleasure; or they may be lacking in adaptability to the conditions we are able to provide. We, therefore, like to know something about them before deciding to admit them to our circle of garden friends.

Of all the countries that have recently been explored in the interests of the gardener, China has been most prolific in good plants. The newcomers, being principally from mountainous regions, are hardy in this country; and so far as their characters have been revealed since their arrival, they are rich in those qualities which are most prized by the lover of plants.

For their introduction we are indebted chiefly to Messrs. J. Veitch and Sons, nurserymen, Chelsea. Most of the plants mentioned in the following notes are to be obtained from them either directly or through other nurserymen. Space will not



[Photo.]

[Copyright.]

Lilium myriophyllum.

The Garden.

New Chinese Plants.

(Continued from previous page.)

In the closely related *Astilbes* we have a set of plants which are excellent for the wild garden, the herbaceous border, or the margins of a stream or pond. For instance, *A. Davidii* forms a grand mass of fern-like foliage, and sends up flowering stems six feet high, the upper half a closely-packed plume of rose-purple flowers. A second species, *A. grandis*, with white flowers, is equally striking.

The *Meconopsis* from China created quite a sensation two years ago, when *M. integrifolia*, with large yellow flowers, and *M. punicea*, with drooping crimson flowers, were first exhibited in London. Their cultivation here has not yet given satisfactory results; they are probably biennial, and they do not set seeds freely. Wilson says they prefer partial shade and a deep, moist soil. They are certainly worth our best efforts to overcome difficulties in their cultivation.

Rodgersia is a relation of the saxifragas. Although not as yet much grown the species are really handsome in foliage, and the astilbe-like flowers are not wanting in attractiveness. They revel in a peaty soil not far from water; such a place for instance as the royal tern enjoys. They have fleshy rootstocks, from which spring annually stout leaves on tall stalks. The form and colour of the leaves are pleasing; when young they are bronzy green, and before they fade they become reddish brown. The new-comers from China are *R. pinnata*, *R. sambucifolia*, and *R. æsculifolia*.

The genus *Primula* is largely represented in China, where between 70 and 80 species have already been discovered, and it is probable that this number will be largely increased by collectors now exploring that country in search of new plants. The best known species in a garden sense is *P. sinensis*, first introduced in 1820. In its wild form this is small and unattractive in comparison with garden forms of it, and if we may take this as an example of what a Chinese primula will become in the hands of the cultivator-breeder, the value of the new introductions is easily seen. Another Chinese primrose, namely *P. obconica*, introduced 25 years ago, has also become a most valuable garden plant.

Messrs. J. Veitch and Sons have recently introduced about twenty more species from China, some of which have already proved their value as decorative plants. The best of them is *P. pulverulenta*, which may be called a glorified *P. japonica*. It was found by Wilson in Szechuan, at an altitude of from 6 to 9,000 feet in marshy land, where it grew to a height of 3 feet, with as many as nine separate whorls of flowers.

P. Veitchii is another handsome addition also from the mountains of Szechuan. It has the general habit of the Siberian *P. cortusoides*, but is larger in all its parts, the leaves are tomentose beneath and the flowers, borne on scapes a foot or eighteen inches high, are in elegant umbels, each with a dozen or more bright rose purple flowers. *P. cockburniana*

strikes an entirely new note in the genus, its flowers being brilliant orange red. It has light green oblong leaves, suggestive of the common plantain, and the flowers are numerous on erect slender scapes. Another species with flowers coloured deep violet-purple is *P. amethystina*; and *P. cognata* has blueish-purple flowers an inch across.

The best lilies are Chinese or Japanese. They include *L. auratum*, *L. Brownii*, *L. elegans*, *L. Henryi*, *L. longiflorum*, *L. speciosum*, *L. tigrinum*, and *L. leucanthum*. These are established garden favourites. Recent additions are *L. sutchuense*, *L. myriophyllum*, *L. duchartrei*, all three champion sorts which have only to be known to become as popular as any of the eastern lilies; they are hardy, free in growth and flowers, and charming in form and colour.

The groundsel family (*senecio*) does not appeal to the gardener, but there are several species of recent introduction from China, which have excellent decorative qualities. Such is *S. Veitchianus* with large heart-shaped leaves, 2 feet across, and tall spikes of bright yellow flowers.

For the water side, or bog garden it is sure to find favour. Another fine species is *S. clivorum*, with large heads of inulalike flowers. The third one is *S. Wilsonianus*. These plants are, from their strong root-stock and vigorous constitution, certain to become general favourites for open air gardening. We shall not be surprised if they become naturalised in this country. Other genera worth mention here are *Corydalis*, *Clematis*, *Actinidia*, *Aconitum*, and several coniferæ. The best of the last named is *Libocidrus macrolepis*, which is as remarkable among eastern cone-bearing trees as Lawson's cypress is among those from the west.

Work for the Week.

Winter Spraying of Fruit Trees.

IN some countries the destruction of insect and fungus pests is made compulsory, and it would certainly be to their own interests if far greater attention was paid to this important matter by many fruit-growers here.

The most efficacious plan to pursue is the preventive method of winter sprayings, and their cleansing effect upon the trees is also valuable. Of the many mixtures that are employed we can thoroughly recommend the following, and it has the great recommendation of being very simple:—Dissolve caustic soda in water at the rate of 2 ozs. to one gallon, and add 2 ozs. soft soap that has first been dissolved in a little hot water.

It must be borne in mind that care is needed in the application of a caustic wash to protect the body or clothes of the operator. Work as much as possible to the windward of the trees, and wear stout gloves. The spraying should not be done in bright weather, or when there is a high wind. A knapsack sprayer is far the best, in fact so necessary is it that the application is thorough, that their use is almost essential. If winter spraying is to be

done it should not be further delayed, and a second application soon after the first is good policy.

Spraying to Defeat the Birds.

We fear it is exceedingly probable that many of our readers have in years past had sad havoc made of their fruit buds by the birds, notably by the bullfinches. Fortunately these garden pests are so far variable in their habits that in some years the fruit-grower escapes lightly.

Gooseberries are the worst sufferers, but apples and plums are also favourites of the birds, and we have in mind a particular garden situate on the verge of an extensive bird-infested wood where, in spite of all efforts made to protect the trees, the damage annually done by the birds is simply heartrending. The proprietor of this place has, however, been experimenting with a new remedy, from which great things are expected. This is a wash for application to fruit trees and bushes, lately recommended in the Journal of the Board of Agriculture, as possessing the quality of keeping off birds. The recipe is as follows: 1 lb. sulphur, 4 lbs. lime, 1½ lbs. soft soap, and 3 gallons of water. Boil the lime and sulphur together for an hour. Dissolve soap in boiling water, then add together. Strain when cool. We have applied this to our gooseberry bushes, which were beginning to be attacked, and the results are so far satisfactory.

Raising Tomato Plants.

As it is quite one of the best of all ways of utilising a small greenhouse in summer, and in ordinary seasons the plants will bear well out of doors, the tomato crop is a really important one in many gardens. A sowing will probably already have been made in well-equipped establishments, but where the supply of heat is by way of being an uncertain quantity the latter part of February is quite soon enough to commence preparations for the indoor crop. This first sowing to be followed by one made a little later, to supply plants for out-door requirements.

The best method is to sow very thinly in well crocked 4½-in. pots, firmly filled with light loamy soil, quite innocent of manure, barely covering the seeds with fine earth. When the seedlings are large enough to handle, transfer them to small pots, potting them nearly up to the seed leaves. Keep them rather warm for a few days until the roots take hold. Afterwards a temperature of 55 to 60 degrees should be maintained. Those for the open ground should be sturdy plants, quite ready to come out of 4½-in. pots by planting time.

To raise creditable tomato plants it is essential that they should have plenty of room, air and light, and that they should not be allowed to get starved and pot-bound, or become dry at the roots. It is well worth while going to the trouble of raising tomato plants at home, as when they are wanted those available for buying are very apt to be but truly miserable specimens. It is certainly advisable that seed should be obtained from a reliable source. For indoor cultivation our preference is for Ham Green Favourite and Duke of York, whilst for growing out of doors some such early variety as Evesham Early or Sutton's Earliest of All.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 93. VOL. 4

FEBRUARY 23, 1907.

1d. WEEKLY.

Some Giant Leaves

And how they are protected against damage.

By S. L. BASTIN.

ONE of those points which must early impress the student of plant life is the amazing diversity in the size and shape of some leaves.

During the untold ages which have passed away since the first appearance of the more advanced forms of vegetation upon this earth, the foliage of the species has undergone many wonderful modifications. Those which appeal most strikingly to the eye are the giant leaves which some plants have developed.

Now the reason for these huge organs is not at all apparent. Very big leaves, although, of course, presenting a fine surface for respiration, have more than one weakness from the point of view of the economy of the plant.

Naturally a tree or shrub with very large leaves cannot have many of them, and the loss of one of these organs, from any cause whatever, will be severely felt and not easily made good.

The large expanse of tissue which the giant leaf presents to the atmosphere, brings about a very marked evaporation of moisture, and in dry localities this is a consideration.

Once again the large leaf is liable to serious damage from rough winds much more so than is its smaller companion.

It is interesting to note the provisions which Nature has made against the deficiencies of the large leaf. As will have been seen, it is very desirable that the organ should be protected against damage, and to this end it is usually of a leathery description.

A special precaution to minimise the tearing of the leaf by wind is to be seen in the border often surrounding the main part of the organ. As may be imagined this acts as a kind of a selvage to the whole.

An excellent example of a bordered leaf is to be seen in the biggest species

of Anthurium. The difficulty of excessive evaporation is overcome by the hardening of the epidermal tissue in such a way, that the free passage of moisture is not an easy matter.

In addition to these precautions many species producing large leaves are notable for their exceedingly rapid growth. The rate at which a banana will develop its great leaves is surprising, the organ unrolling at the rate of several feet in twenty-four hours.

Nevertheless, in spite of all the provisions made, banana leaves suffer much from wind, and it is no uncommon sight to see a plantation of trees in which the foliage is simply torn to shreds.

A climbing Aroid, called *Monstera deliciosa*, has large leaves which are strangely marked with holes and fillets. It is easy to understand that in such a condition the foliage offers but little resistance to the wind and escapes undamaged from many a threatening storm. It is thought that the holes in the leaves serve an additional purpose of assisting the illumination of the whole plant by letting the light through every leaf to the one beneath it.

There is some difficulty in saying just which is the biggest leaf in the world.

Such plants as gunneras, bananas, and other more or less

familiar instances pale before some of the great arums which have been found in tropical regions. Some of these send up huge leaves, fourteen or more feet in length. But even this is nothing compared with the sago palm, a tree which grows to a great height and frequently sends out leaves as much as forty feet long.

Nor must one forget the greatest of all aquatic plants, the famous water lily, *Victoria Regia*, illustrated on page 221 of this number, the big leaves of which are nowadays familiar objects to us.



Photo.

[S. L. Bastin.

Big Banana Leaves growing out of doors at Falmouth.



Photo.]

Giant Leaves of a Gunnera.

[S. L. Bastin

Country-Side Notes.

Warham, Norfolk.

"In his sight always
How sweet are reverence and gentleness
Done to his creatures."

—SIR E. ARNOLD.

(Sent by F. Gibson.)

OFTEN at this time the sunlit patches of golden gorse are murmurous with honey-bees; and if there is no sound of bee to-day the gorse is still golden in patches, waiting only for the sun to bring the bees. Even if, as sometimes in mid-February, we can trace the trodden high-ways of the hungry rats upon the snow, we have somewhat to be thankful for in the knowledge that spring cannot linger ever on the way. For the year certainly marches. The curlews are on the move—though they spread their migration over months—and the voice of the wild geese has not been heard for days in places where their clanging chorus, as they swung across the sky in ordered V-shaped squadrons, had been the pleasantest of all wild Nature's music in the winter months. Though the going of the wild geese is difficult to fix exactly, because they shift their feeding-grounds and lines of flight so often towards the end of their time, they seem really to have departed now, leaving us to listen to the lesser chorus of the song-birds, swelling daily in volume despite wind and rain. The storm-cock missel-thrush especially now reiterates "Tyrr-a-weet-a-weet" from every coppice, and between the storms the skylark shrills aloft."—*The Country Day by Day*, February 20th.

I am very sorry that the clever American mare, "Princess Trixie," has left this country without going through the public test which had been arranged with a scientific committee. When I first learned the symptoms of her illness I feared that this would be the case; and, weighing the advantage of giving my own opinion as promised to my readers against that of remaining upon a committee which might never meet, I chose the former. I am, of course, glad that I did so, because the opinions which I was able to express were fresh and vivid. Had I waited to see whether the committee would assemble later, the accuracy of the impressions conveyed to me by the mare's performance would have been blurred. As the matter stands now I am confident that the animal completely failed to establish the claim made on her behalf that she possessed human intelligence of any degree. Her performance was remarkably clever, but her conduct showed that she had no knowledge of the meaning of the numbers which she was supposed to add or subtract.

I am greatly indebted to Mr. H. Beeston, of Havant, Hants, for the opportunity of perusing the careful and complete record which he has maintained of the prolonged stay of swallows and martins in the neighbourhood of Havant during the last three winters. The record constitutes a unique and extremely valuable document, and I hope that it will be published in detail in the *Zoologist* or some other scientific journal.

Briefly, the record shows—beyond all chance of dispute, I think—that the swallow birds which have stayed during the last three remarkable winters in the neighbourhood of Havant, in Hampshire, from early in November until late in December or even January, have remained there because they had no desire—no inclination, or impulse, or instinct—to depart.

How are we to reconcile this fact with either the generally-accepted theory that birds on migration are impelled to fly by some infallible instinct and are guided by a mysterious sense of direction, or the old-fashioned belief that they hibernate in holes or under water, or the new theory—for which I am responsible—that they simply fly with the wind in season? Now, with regard to my own theory, I may frankly state that, between the beginning of November and the middle of January, while these swallow birds remained on the wing near Havant, the wind blew at times from all quarters of the compass, and if all that the birds then needed was a favourable wind for migration they could, and would, have departed.

There are one or two facts in Mr. Beeston's record, such as the reappearances of some of the birds after short spells of hard weather, when they had not been seen, which seems to favour the old-fashioned theory that swallows can hibernate in England. And this old belief gains curious support from the alleged modern discovery that in some distant parts of the world there actually are martins which hibernate like mammals or reptiles. But, however this may be, it does not at all simplify the problem of migration, but rather complicates it, to suppose that swallow-birds can hibernate in holes, or, as Dr. Johnson held, "conglobulate" in the mud at the bottom of a pond. For the migration of the strong-winged swallow is less wonderful than that of the weak-winged chaffinch and other little warblers, and no one pretends that these hibernate in holes or under water. We may therefore dismiss the notion that swallows do so, because even if it could be established it would not tend to the solution of the problem of migration in general.

I think, too, that it would be waste of time to attempt to reconcile the stay of these swallow-birds at Havant, in spite of winter's frosts, with the popular theory of a mysterious instinct and a "sense of direction." We should have to supplement this theory with another, to the effect that the atmosphere of Havant exerts a still more mysterious influence, annulling the instinct and obliterating the sense of direction. Otherwise why should swallows, house-martins, and sand-martins remain in consecutive years through the worst months of winter in a little nook in Hampshire until they die one by one?

To my theory that birds fly with the north or north-east wind in autumn, and are occasionally miscarried when the wind fails them in crossing the seas, this ques-

tion suggests no serious obstacle. The neighbourhood where the birds remain is, so far as the winds are concerned, a sort of *cul-de-sac*, or blind alley. It is protected on the north by the Downs and on the south by the Isle of Wight. Moreover, the water of the stream over which these few swallows hawk for food during December and January is appreciably warmed by the output of heated water from factories on its banks. In consequence the water-weeds grow luxuriantly all through the winter, and gnats are continuously emerging from it. Therefore it follows that birds which chance to arrive at this spot in late October or early November miss the influence of the north-east wind. It cannot reach them over the high shoulders of the Downs, and its essential attribute from the birds' point of view—the absence of insect life—is wanting, owing to the artificial warmth of the stream. Therefore the birds remain until they die; and, as Mr. Beeston shrewdly remarks, it is probably only a very few degrees of temperature on a few days in mild winters which prevents these few swallows from surviving until their brethren return to us in spring.

I think, however, that it would be a mistake to suppose that the few swallows which remain near Havant in some years have not migrated at all. I think that they are foreign birds which have come from Northern or Eastern Europe, and have been miscarried to the south coast of England. October is the proper month for the migration of swallows, and it is interesting to note, from the summary of the Meteorological Department, that, of sixty-two observations of the direction of the wind in the neighbourhood of Havant during October, thirteen were south-east and thirty south-west, but only one north and two north-east. If, therefore, we suppose that these birds arrived in that sheltered nook with one of these numerous southerly winds, it is easy to understand how, wearied already with travelling, they would elect to remain. They had already migrated and reached a haven of a sort, whence neither the wind nor the absence of insect life gave them a hint to depart.

In response to my request for facts, a curious conflict of evidence reaches me on the question whether a chaffinch walks or hops, and this in spite of the fact that the observations recorded were made for the express purpose of settling the question. In Essex, Hampshire, Cheshire, Yorkshire, and Scotland observers report that the bird both walks and hops. In the London district and in Kent opinions are divided, because while some say that the bird both walks and hops, one observer in the London district (C. Hawkins) declares that it only walks, while one in Kent (G. Inman) says it only hops. In Sussex the only report received is that the chaffinch walks (S. Yeates), and in Norfolk that it hops (H. Powell). At Old Colwyn, in N. Wales, at Tavistock and Devonport in Devonshire, and at Reigate, in Surrey, correspondents say that the bird hops only, and does not walk.

From this summary it does not seem possible to draw any lines of geographical distinction, such as bird-fanciers recognise in the case of the chaffinch's song. Nor can the weight of evidence on either side be held entirely to overbear that on the other: for while a score of observers say that the bird both walks and hops, two declare that it only walks, and six that it only hops; while one correspondent says that once only, at midsummer last year, has he seen a chaffinch walk. Another quotes from A. G. Butler's "British Birds and their Nests and Eggs":—"Like the British buntings, the chaffinch both runs and hops; on the ground it invariably either runs or walks"—a statement which is manifestly wrong—while on the other side an observer suggests that anatomy might prove that it is not possible for a chaffinch to walk at all!

* * *

An entirely new idea is imported into the discussion by one reader, who says that male chaffinches alone can walk or run and that the females always hop. If this should prove to be the case, it would be a very interesting fact; and certainly, so far as I am concerned, the birds which I have watched for the purpose of deciding this question, happened to be hens. Another suggestion is that the bird walks or runs when, like a wagtail, it is looking about for insects, but that it hops when it is feeding like a finch. Further observation on these lines might also settle the question.

* * *

Interesting lines of inquiry arising from this discussion regarding the chaffinch are suggested by readers who, on various grounds, believe that there are two distinct types of British chaffinch, distinguished by differences in colour, gait, song, nest, and egg. Mr. J. Inman, of Dover, writes:—

I have found two different types of nest; one a neat little nest of silvery moss like a goldfinch's, placed in the forked branches of tallish trees, and the other in hedges, not nearly so well made, with larger and more boldly-spotted eggs. I also recognise the two different types of song. One is "Ching-ching-chow-chuck-wado," and the other "Ching-ching-chow-chow-kiss-me-dero." A bird that doubles the last note is what we term in the singing competition a "two in the mouth bird," and more valuable.

* * *

And Mr. H. Frost, of Reigate, writes:—Some, which I believe to be foreign immigrants, are very dark in colour, and, as a rule, I have observed that the best finished nests have the best eggs with a well-defined big and little end; while the nests not so well finished have stumpy eggs.

As the singing and nesting-time of the chaffinch approaches, I would suggest that as many readers as are interested in British birds should make notes regarding each nest of the chaffinch which they may find, recording whether it is placed high or low, whether it is very neat or not very neat, whether the eggs are well-shaped or stumpy, whether they are lightly or heavily marked, whether the colouring of the birds is dark or light, and what is the gait of both sexes. Other points of interest should be noted; and I should not be at all surprised if we find that, as is known of starlings and is suspected in the case of yellow-hammers, willow wrens, and some other birds, we have two distinct kinds of chaffinches in Britain.

The other day, in noticing the strange story of a Darlington policeman attacked by a rat, I referred to Mark Twain's "suggestion" that the famous sentinel of Pompeii, who was killed at his post when the city was destroyed, was asleep. A Helston reader has kindly copied out for me the incriminating passage in Mark Twain's "Innocents Abroad," where, of course, the humorist distinctly says that the sentinel, being "a soldier—not a policeman," deserves praise, because the warrior instinct forbade him to fly, whereas had he been a policeman, he would have been asleep. Now, Mark Twain has often complained that people think him jesting when he is most serious; but to me this passage has always seemed to be a very sly suggestion that the famous sentinel really was asleep. At any rate, since reading it, the possibility that the man only awoke to find himself dead, as an Irishman might say, has always spoiled the story. So, if I were a humorist, people might think, when I said there was no need to suppose that the Darlington policeman was asleep on fixed-point duty when the rat ran up his leg, that I was making the same sly suggestion. The author of the famous advice to an angry crowd:—"Don't nail his ear to the post!" was careful to deprecate that procedure; but the result was the same.

* * *

A reader suggests that the reports of cuckoos being heard in Britain before their time disprove themselves, because the cuckoo ceases to use its call note when leaving us in summer, and presumably will not recommence until March or April. Therefore he holds that, even if cuckoos might be seen here in December, January, or February, they would be silent. I do not, however, think that this would necessarily be the case. To what extent the cuckoo is silent when absent from home I cannot say; but I have heard it calling in the plains of India, where it does not breed. Moreover, even if it were normally silent until the spring, an individual cuckoo which made the mistake—if such mistakes really are made—of migrating in December or January, instead of April, would do so in obedience to a premature "spring-feeling," and the same feeling would prompt him, on arrival, to sing.

E. Kay Robinson.

The Alps in February.

The windless mountain valley sleeps in snow;
The sheeted torrent dreams beneath the pines;
A tracery of splinter'd ice defines
Each blade and twig, and crystal florets grow
Where in gay June the tassell'd oxlips blow.

This is the "tomb of Silence"; the sun shines
On stillness absolute; in these confines
The blanchéd moon looks down on death below.

The lawns are green in England! Love, we might
Find primroses in some deep-shelter'd lane;
And we should see the yellow gorse alight
Upon the hills if we were home again;
Should hear the huge sou'-wester roar at night
And dash warm drops against our window-pane.

GERALDINE M. SEYMOUR.

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose halfpenny stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

* All applications should be addressed to Miss G. B. Norreys, Warham, Wells, Norfolk. All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should also be notified to her.

SPECIAL ADVANTAGE FOR MEMBERS.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street.

B.E.N.A. Fund.—Amount previously acknowledged, £15 7s. 5d. Since received: 2s., Frank T. Clark; total, £15 9s. 5d.

Motto and Badge.—By an almost unanimous vote the motto, "Beatus Est Naturæ Amor"—"Blessed is the love of nature"—has been selected by the large number of members who have sent in their opinions. It will, therefore, be adopted; and we may now proceed in the preparation of the badge without further delay.

Signature of Members.—In reply to inquiries, members who propose to use the distinguishing letters of the Association after their names should use only "B.E.N.A." and not "M. B.E.N.A." The use of "M." to signify "Member" is only necessary in the case of societies which have separate grades as "Fellows," "Members," "Associates," and so on. In the B.E.N.A. we are all equal.

Local Branches.

SWINDON DISTRICT, WILTS.—Will members or readers desirous of becoming members of a B.E.N.A. branch in this district, communicate with Mr. C. H. Gore, 13, Granville Street, Swindon, who has undertaken the provisional local secretaryship?

THE POTTERIES, STAFFS.—Mr. H. Gould, 122, Princess Road, Penkhull, Stoke-upon-Trent, has undertaken the local secretaryship of this district; and will be glad to hear from any members or intending members in the Pottery towns or outlying country.

LONDON, S.W.—Will members in this district (except Putney, Wimbledon, etc.) communicate with Mr. A. E. Hick, 4, Pursers' Cross Road, Fulham, S.W., who is acting as local hon. secretary in forming a branch.

Naming of Specimens.

SUSSEX.—*Butterflies and Moths*: Mr. F. J. Arnott, 29, Springfield Road, Brighton, Sussex, who has kindly offered to make free photographs of natural history specimens for Sussex members, is also willing to name butterflies and moths provided that a stamped and addressed cover is enclosed.

Distribution of Specimens—Ald Wanted.—In the Plumstead district, the local hon. secretary, Mr. W. E. Foster, 1, St. John's Road, Plumstead, S.E., having distributed among the schools of the neighbourhood about 400 specimens of butterflies and 430 birds' eggs, has still about thirty letters of application which he is unable to satisfy. Perhaps some other members will assist him with specimens.

Messages from W. Wales.—"We are quite a considerable band of COUNTRY-SIDE readers here in Western Wales drawn together by our common love of the doctrines which the dear little nature paper teaches. May it go on from strength to strength!"—G. H. ROSSANT, Pembroke Docks, South Wales.

Queries, Answers, & Correspondence.

(Correspondents will greatly oblige by writing on one side of the paper only.)

"Surplus Males."—For the past few years I have kept and bred tame rats, and have paid particular attention to the proportion of the sexes in each litter. In most cases the proportion of males and females has been as 7 is to 6, *i.e.*, seven males to six females; but in the case of two litters born respectively on August 27th and 29th last, the disproportion of sexes was remarkable; there being, in the former, 7 males to 4 females, and in the latter, 8 males to only 2 females. During the whole of the time I have kept these animals, I have never known a similar case.—R. ANTHONY, Caledon, New Barnet.

Concerning the Kite.

—I may mention that since my last week's note on the kite was penned (in the summer), I know for a fact that a third brood flew in safety. And besides these three hatches I knew of two more nests with eggs which I have every cause for believing hatched off, and saw a sixth pair of birds over an ancestral haunt. Their eyrie was there, but they either had not laid when I saw them, or, what is more likely, they had been robbed. I may say that three, if not four, of these pairs are quite unknown to the bird protectionists. — JOHN WALPOLE-BOND.

Do Birds Yawn?

I think this is very general with birds, especially large ones. I have particularly noticed it in parrots. The beak is not only opened and then immediately shut, but remains extended for a few seconds. I agree with your correspondent that this very often occurs after the bird has been preening its plumage, but I have also observed it when everything around the bird is unusually still. My opinion is, that birds do yawn.—W. E. TANNER.

Wild Gardening at Large.—I was interested in a letter recommending the sowing of seeds in the country lanes, etc. I may say that for years I have been a disciple of that branch of horticulture with varied success. On one occasion I had a nice clump of malope growing on a bank of a lane, but the Urban District Council set to work, and one day I found my malope buried under a foot of mud, scraped from the road. On another occasion I gave a man a mixture of annuals to sow on a railway bank, but never a seed came up. The man told me that the sparrows came down in their thousands, but I afterwards discovered that his garden was the envy of the neighbourhood. I tried a row of sweet peas in a secluded glade of Epping Forest, and all went well until the rabbits took a fancy to them. I am more successful with bulbs, and my weekly visits are now being repaid by seeing the white pips of crocus, the bright green

foliage of narcissus and galanthus (the giant snowdrop), some of the latter being already in flower.—ROBERT MAIN, Leytonstone.

Many-toed Cats.—The possession of supernumerary toes seems to be a common attribute to the domestic cat. It may, in connection with the eight extra lives, be a case of "correlated variation." Occasionally, we meet with specimens in Yarmouth, which appear at first sight to be wearing boxing gloves. Examination proves that in some cases they have two complete feet on each front leg, four fore feet in fact. Last year I dissected one, and macerated the fore legs. The photo shows the condition of the dry bones. The ulna and radius of each limb

now eight years old, but she will only touch the glass when she is anxious to be let indoors. She jumps on to the window-sill, stands on her hind legs, and regularly claws the glass for some minutes, with her fore paws, almost as though she were working a tread-mill. It is almost impossible to keep the windows clean with her, especially in muddy weather. P. GRANT, New Forest. [Other correspondents quote instances of cats pawing the window when they want to be let out or in; but this does not confirm the suggestion made by "A. J.," Somerset, that some cats find a peculiar pleasure in stroking the glass. Probably "A. J.'s" cat merely pawed the glass when it wanted to get out.—Ed.]

Effect of Locality.

A fortnight ago, I noticed that the black-headed gulls on the south coast near Deal had heads already nearly black. Now (February 5th) near Liverpool I find that their heads are still nearly white. — G. B. N.

Peculiar Action of Frost.

—A glass had been used for lemonade filled to within half-inch of top. This had been drunk, but evidently left a wet film at its highest level. The frost had fractured the glass completely round with the exception of half an inch—apparently where the lips had touched the glass—the fracture then took an upward turn on each side of this half inch—evidently suddenly, for the now severed ring was thrown over the projecting half inch and there hung suspended.—GEORGE HIGGINS, Waltham, Leics.

The Cuckoo's Music.—It may be of some use to those in doubt about the note of the cuckoo to know on good musical authority that the bird's call is a *minor* 3rd; whereas the usual note of a cuckoo clock is a *major* 3rd. On the accuracy of the statement your musical readers can rely.—E. P. S.

"Why Choughs are Rare."—It may be true that one reason why choughs are rare is because the young are bad fliers and easily caught by hawks; but the Kearton Brothers say in one of their books that they have heard from reliable persons that men stand regularly under their nests and take their eggs as they lay them.—"A READER."

[Correction.]—In the article upon beautiful shells (page 173, February 9th), the illustrations, with their accompanying underlines, should have been transposed, that which appeared second being first, and the first second. Further, the "interesting group of shells" to agree with the descriptive letter-press in the article should have been placed so that its left side was at the top.



Photo.]

A Cat's Superfluous Claws

This picture shows the condition of the skeleton of a cat's feet with extra claws. These are evidently imperfect second feet.

[P. E. Rumblelow.]

are normal, the carpels slightly modified, and the usual metacarpals crowded closer together. The additional digits were on the inner side of the limb in this case, three on the left and two on the right. The muscular system was incomplete, but the claws were extensible.—P. E. RUMBELOW.

Aged Newts.—A neighbour of mine, Mr. P. Payne (Old Colwyn, N. Wales), has a newt which he has kept in an aquarium for thirty-one years. He gives her about two inches of water with wood to bask on. She measures about 6½ inches, and is nearly black. She knows him well, and takes small pieces of meat and worms from his hand. He tried to get a photograph of her, but so far has failed, as she gets restless with strangers. He, however, hopes in time to get one, when one can be sent to THE COUNTRY-SIDE. At first he had also a male newt, which lived twenty-five years. This seems a most unusual time for newts to live. Can anyone tell of their living longer?—Mrs. T. L. WARD, Old Colwyn, N. Wales.

"Cats and Glass."—I have noticed that my own cat, a tabby Persian, is exceedingly fond of feeling glass with her paws. She has always done this, since kittenhood, and she is

The Pacific Eider.—This beautiful bird, by far the most interesting of recent additions to our British avifauna, belongs to a species but rarely mentioned in ornithological works available in England. Even since its occurrence in Britain few people have heard much of it, and fewer still would be able to recognise it, although the bird may occur a great deal oftener. The history of the bird in the photograph (which is the only European specimen known) is very briefly as follows:—On December 14th a wildfowler named George Sutherland shot at Graemsay in Orkney a bird which he sent as a common eider (*Somateria mollissima*) to a Scarborough dealer

Island; blue wattle, North Island; two kiwis, two wekas, or woodhens. Of the other birds, some are confined to one island, and some common to both. As settlement increases, most of the native birds are driven further and further back, as thousands of acres of bush are felled and burnt and sowed down with English grasses annually, and their place is taken by the English birds, which give Taranaki quite a home appearance. We have the blackbird, song-thrush, missel-thrush, chaffinch, yellowhammer, greenfinch, goldfinch, skylark, house-sparrow, starling, and the Indian mynah.—A. MESSER, Hawera, Taranaki, New Zealand.



Photo.] [T. Taylor.

A Bird that was new to Britain.

A fine specimen of the Pacific Eider, which somehow travelled to British waters and is now in the Oldham Museum.

The dealer re-addressed it to Mr. Fred Stubbs, of Oldham, who recognised it as the Pacific eider (*Somateria*, var. *nigrum*), and not the common eider for which it had been sent. The unopened body, subsequently followed by the stuffed skin, were at once forwarded to the British Museum; and Dr. R. Bowdler Sharpe exhibited the bird at the meeting of the British Ornithologists' Club on January 18th, 1905. The home of this bird is in the North Pacific, from whence it has but rarely wandered—and never before to the Atlantic. Little has been recorded as to its habits; but these are presumably the same as those of its close relative, the common eider. The male may, of course, be always recognised by the black V, one arm of which shows clearly in the photograph; but the females and the young of both sexes may be readily identified by the sharp ends to the bare wedges at the sides of the bill. In the common eider these are rounded. This unfortunate straggler from its western home—or should it be eastern?—was in wonderfully fine condition. Its presence in European waters is a great mystery. It may be added that Mr. Stubbs, refusing several offers for the specimen, presented the bird to the Oldham Museum, where it now forms one of the treasures of the bird collection.

Curiosities of New Zealand Birdlife.—Though the two islands of New Zealand are only divided by a few miles of sea, at Cook's Straits, there are several families of birds that have a representative in each island peculiar to each. There are two canaries, the white head canary, North Island; the yellow head canary, South Island. (I remember seeing a large flock of these birds on the west coast of the South Island for the first time in 1866, and very pretty they looked in the dense bush.) Two robins, two thrushes, two crows, orange wattle, South

"The Work of the Ivy."—The suckers of the ivy do not absorb food, but, under certain conditions, readily send out roots which will penetrate every nook and crevice of the hardest wall and disintegrate the stone. Such a plant when cut above ground will live for years fed by these adventitious roots, but (to us) having no visible means of support. These conditions are preventable by a little attention, whereby the ivy will be more beautiful and protect, instead of injuring, the wall to which it clings. Briefly, the conditions of neglect are these: From March to May the leaves are shed. These often fall among the loose branches and new leaves, and there rot, becoming leaf mould. Then sparrows, starlings, blackbirds, etc., come to roost in the shelter in winter, and have nests in summer, leaving shovelfuls of droppings and nest rubbish to rot with the leaves. These and many more causes, combined with the rain, go to form an earthy surface in which the ivy soon makes root, sometimes with devastating results. To prevent the aforesaid state of matters, the leaves, which about March begin to show symptoms of decay, should be stripped close to the plant stems with a hook or hedge shears, and loose stems fastened close to the wall, while leaves and debris should be carefully cleared away. If birds roost and build nests it would be wise to remove old nests, etc., about September, but not to cut any leaves at that time. With ivy on trees the clasping stems injure the tree by pressure on the growing trunk and branches. The evergreen leaves also smother the host plant by shutting out the light and air, but the greatest injury to the tree is done by the ivy's own roots underground. These are exceedingly vigorous and masterful, and as they begin where the tree has fewest feeding rootlets, viz., close to the stem, in a short time they are able to rob the tree rootlets. Ivy has the advantage also of always having the leaves in operation (except in a lesser degree during frost), whereas the deciduous tree has a relatively shorter season in which to struggle. The result of this crowding out of the rootlets is that the leafage at the extremities of the tree branches are weakened and die, when bare branches will appear above the leaves, giving a new advantage to the ivy in the way of light and air. Thus, the unequal struggle goes on for a long time above and below ground, until only the leaves of the ivy are left spreading in triumph after a hard won victory.—JAMES KING, Howard Park, Kilmarnock.

"Water Divining."—Re your articles printed recently on "Water Divining," the enclosed cutting from *Tit-Bits*, October 5th, 1895, may interest others of your readers besides myself. One point in particular I would draw attention to: "Mrs. Turner also proved that glass is a non-conductor, by standing on four glass tumblers over the spring, the twig then remaining stationary only to leap round as before the moment she put her foot to the ground." This is entirely different from your contributor's ("The Path-finder") experience, which states:—"I had recourse to putting the ends of the rod in bottles, as shown in photograph No. 2, and the rod, without coming in contact with the hands, revolved in the same way." In both cases the twig or rod was insulated! What then is the explanation of this discrepancy?—A. E. HORNER, Pattingham. [The use of the glass bottles was

the most remarkable and mystifying part of "Path-finder's" article. Members of the B.E.N.A. will be glad to hear that the lady has agreed to give a demonstration for their benefit in the spring.—ED.]

Experience in Feeding the Birds.—I put out a saucer of milk on the window sill to freeze, intending to eat it afterwards with jam. But my hopes were frustrated, as the blackbirds and blue tits ate it all as it froze. I find that porridge is much appreciated by the robins, thrushes and blackbirds; they find it very satisfying. The hawfinches are generally too shy to approach the windows, but on Thursday I watched one of them feeding with the sparrows at the foot of the bird-table. I put out a plateful of bread steeped in milk, which froze before the birds had time to eat it all; it was amusing to see (and hear) the nut-hatch hammering it with great blows of his bill. Since the orchard pond froze on Wednesday, a moorhen has taken up her abode in the garden; she walks about the lawn all day eating grass. When she is tired, she sits down and continues to graze. When anyone approaches she runs into the bushes.—IDA NORMAN, Severth Stoke, Worcester.

Calvary Clover.—Several members of the B.E.N.A. who have been supplied with the curious seedvessels of the above plant have enquired as to the best mode of cultivation, time for sowing, etc. The prickly seed-pods should be unwound, beginning at the top, and the smooth seeds will then drop out. These latter may be sown in the open ground, like any other annual, about the beginning of May. The seeds should be put quite six inches apart, as the plants require plenty of room, and do well with a little support. Everything in the development of these plants is interesting to watch, from the first few trefoil leaves all splashed with deep red to the prickly seed-pods which, as they increase in size, close up and form a compact ball with the spines tightly lapping over each other. When these balls are unwound, they form what has been, not unreasonably, likened to a "crown of thorns."—MRS. CLARKSON, Alpina, High Wycombe.

Nature's Mimicry.—Of all the quaint tree-growths in Britain, perhaps this "lion-tree" at Beeleigh, near Maldon, in Essex, is best known. As will be seen from the illustration, the excrescence upon the trunk has a very remarkable resemblance to the head of a lion, unless, indeed, the prolongation of the nose as well as its high bridge near the eyes does not more accurately reproduce the likeness of one of the large dog-faced baboons. At any rate, it very closely resembles the head of an



Photo.] [A. H. De'Ath.

The Lion Tree of Beeleigh.

A giant elm tree near Maldon which has an excrescence curiously like an animal's head upon the trunk.

animal; and the lion tree—an elm of great size—has much local notoriety. A quarter of a century ago there were four elm trees in a field near Datchet on the L.S.W.R., which were well-known as the "Datchet Horse" from their combined likeness to a grazing horse.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, FEBRUARY 23, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Do Hybrids Breed?

By FRANK FINN, B.A., F.Z.S.

THE very word hybrid—from the Greek *hubris* (insult) denotes that the ancients regarded such mixed productions as outrages on Nature, and history has recorded how ancient is the knowledge of the sterility of the most familiar of hybrids, the common mule. When Zopyrus, the Persian general, says Herodotus, was besieging Babylon, a Babylonian, confident in the huge fortifications of his city, called out from the wall that the Persians should take Babylon "when mules should foal." Shortly after that it so happened that a pack-mule in the Persian camp *did* foal, which set Zopyrus thinking, until he planned the stratagem by which Babylon fell to his master.

Even to this day the foaling of a mule has been regarded as almost incredible, and this known barrenness of so common a hybrid, joined to the like sterility which experiment proved to accompany species-crosses in general, has generated a belief that the sterility of hybrids was divinely imposed, in order to keep species pure and separate. This phenomenon has, and rightly, long been considered as an obstacle to belief in the evolution of species from each other; but it is too little known that the sterility of hybrids is not universal, although it so happens that the cases of the reverse are either of recent record or comparatively little known.

Of course, the complete fertility of hybrids between such forms as the hooded and carrion crows, and the Chinese ring-necked and common pheasants, cannot be taken as proof of the possibility of hybrids reproducing, for such birds as these differ only in colour, and it is open to anyone to say that they are not really distinct species.

There are, however, many cases in which species, undoubtedly distinct, have produced offspring capable of breeding again. One of the most remarkable now finds representatives at the Zoo. Here you may see a bear bred between the white and brown species which has, mated again to a white bear, produced a three-quarter breed, looking like a pure Polar bear save for a shading of brown over its back.

These two species of bears are certainly as distinct as are the horse and ass; and the same may be said of the American bison and our cattle. Yet in America hybrids between the bull bison and common cow have often been bred, and these are regularly capable of reproduction.

We must, therefore, regard the sterility of the equine mule as something characteristic of that family of animals, and not necessarily applying to mammalian hybrids generally.

As birds are so freely and widely bred, we may expect to find that fertile hybrids have been more freely recorded among them; and, indeed, there are too many cases to notice in detail. The most anciently known is that of the hybrid between the common and Chinese geese, which was known to Linnæus to be capable of breeding, and has been tested since, notably by Darwin himself. The Chinese goose, it may be useful to recall,

differs from the common species in its colour—brown, with a dark cap and neck-streak, instead of grey; in its differently-shaped beak, often surmounted by a knob, and black in colour; in its longer neck, devoid of the ridges and grooves in the feathering found in the common goose; and in its different cry and more aquatic habits. Wild, it inhabits the eastern parts of the old world, and is there domesticated, as the grey goose is in the Western. I go into these details because I notice that if one quotes a case like this one is told that the species are "both geese," as if similarity of name meant identity of species; whereas it will be seen that the two birds are really as distinct as other allied forms, such as our various thrushes, for example.

Other fertile hybrids among birds are those between the mallard and pintail ducks, and golden and Amherst pheasants, these birds also differing in form as well as in colour, so that they are undoubtedly specifically different. The pheasant hybrids have been bred from, *inter se*, for five generations and still retained their hybrid appearance, so that a mixed species could be created in this way if breeders thought it worth while. As a matter of fact they have not, preferring to breed the hybrid hens back to Amherst cocks and so regain the more valuable species in its purity, for when a hybrid is fertile the second cross back to a parent stock will eliminate the alien taint.

One of the most remarkable bird crosses ever bred was one obtained by Monsieur G. Rogeron, of Angers, who obtained several broods of hybrids from a duck bred between mallard and gadwall, which had chosen a pochard drake for her mate. But since then many instances have been recorded of such "tribrids," or double hybrids, chiefly by Mr. J. L. Bonhote, among the duck tribe, though never between such remote parents.

There is at the Zoo at present a fine male hybrid between the wood-pigeon and domestic pigeon, and this bird has bred in his turn with a hen of the latter species. In breeding this hybrid it has been found necessary to use the hen wood-pigeon and cock domestic pigeon, contrary to what one would expect, as female domestic birds are naturally generally the best breeders. However, British bird-fanciers find it necessary, in crossing the bullfinch with the canary, to let the latter bird be the male, the male bullfinch hardly ever being of any use for breeding in captivity. The "mules" between the various British finches and the canary are, by the way, always, or nearly always, sterile, which fact has greatly aided in keeping up the belief in the universal sterility of hybrids. Among other passerine birds, however, hybrids between the grey and pied wagtails have bred again; but, of course, hybrid wagtails have very seldom been bred at all, so the case is little known, while hybrid finches are turned out by the hundred annually.

The beautiful Rosella and Pennant parrakeets will produce a fertile hybrid, formerly described as a distinct species under the name of the red-mantled parrakeet. This is a good case, as the two birds are well differentiated, though rarely allied, Pennant's parrakeet being a larger bird, with fewer colours in its plumage, and having a very distinct immature dress, which the Rosella has not.

Among the amphibia we have a fertile hybrid in that produced by the great crested newt, so familiar here, and the Continental marbled newt, which latter has often been on view at the Zoo. It is very distinct from the crested species, being mottled green and black in colour, and having in the breeding male a plain-edged crest instead of a toothed one, to say nothing of other differences.

More instances could be given, but the above are sufficient to show that the sterility of hybrids cannot be regarded as instrumental in maintaining the purity of species, as although in some of the cases given the parent forms could not meet without the intervention of man, in others they occur in the same country, and do indeed, as in the case of the mallard and pintail ducks and Rosella and Pennant parrakeets, occasionally hybridize in the wild state.

The real cause of the continued distinctness of true species, as opposed to colour forms—which always inter-breed where they meet—seems to lie simply in their disinclination to inter-breed where they have a wide choice of partners of their own kind. The hybrids produced are so few in number that the likelihood of their meeting sufficient hybrid partners to perpetuate a mixed race is very small. The sterility of most hybrids, therefore, remains at present an unsolved problem, though not more inexplicable than many others connected with reproduction.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to Mr. Charles H. Rogers, 38, Argyll Road, Westcliff-on-Sea, Essex.

Is the London Zoo the largest and oldest institution of its kind in Great Britain?

It is the largest, but not the oldest institution of its kind in the Kingdom. The Bristol Zoo is older. In the reign of Henry I., a menagerie containing lions and leopards was in existence in the Tower of London. Henry III. added a white bear from Norway, and an elephant, said to be the first ever seen north of the Alps, was given to him by the French King. The last of the wild beasts was removed to the Regent's Park Zoo in 1834. It was not until 1826 that the present Zoological Society was instituted, and the ground in Regent's Park was rented in 1828.

Why do white spots occur upon the nails?

There is a disease of the nails called *Leucopathia unguium* (from Greek "leukos," white, and "pathos," disease), in which a loosening of the tissues of the nail takes place, causing the formation of small cavities. As these are filled with air, the light, instead of passing through as is the case with the healthy nail, is refracted, making the spots appear opaque. It has been suggested that the affection is connected with the nerves; or it may only be due to defective nutrition of the nail-forming organ. The same result is obtained by injury to the nail as by a blow.

Has a man ever walked on the ceiling?

This feat was performed rather more than half-a-century ago by a man named Sands who, taking as his models the common house-fly, and an old fashioned toy called a "sucker," attached hollowed leather discs to his feet, and having previously damped them, was lifted up to the ceiling. Naturally, the leather "suckers" attached themselves at once, creating a vacuum which was sufficient to support a man's weight. Like the "sucker" they could be withdrawn by force, so that once in position, the rest was comparatively easy.

This question has been ingeniously answered by suggesting that visitors to the "topsy turvy house" at Paris and Earl's Court walked on the ceiling, and by stating that one walking in an upper room is on the ceiling of the room below.

Is there anywhere in the world a cave of marble?

Yes, there are a number of such caves. One was discovered in 1905 at Ross Peak, a mountain on the main line of the Canadian Pacific Railroad some distance east of Revelstoke. Then there is a wonderful cavern situated in the little island of Antiparos, in the Grecian Archipelago. It is

called the "Grotto of Antiparos." The grotto proper, a magnificent hall at the farther extremity of the cavern, is reached by a series of passages. These passages each terminate in a precipice or steep declivity. The third passage is of glittering white and red marble, as smooth as if wrought by art. North-east of the city of Shui Hing, in China, are the famous marble hills and caves, called by the Chinese "Tsat Sing Ngam" (Seven Star Hills). They consist of groups of precipitous hills, and there is a marble cave in the largest of these hills, which, ascending a flight of steps, shows a small temple cut out of solid rock and dedicated to Kun Yum (the Goddess of Mercy), a large figure of whom has been cut out of the virgin marble, also two figures of warriors guard the entrance to this sanctuary. In Somaliland, thirty miles south of Ginea, Dr. A. Donaldson-Smith, in about 1894, discovered a cave of marble. There is another marble cave in Cuba, situated 1,000 feet above the level of the sea in the midst of dense forests.

Why does not the opening of a window stop a chimney smoking better than the opening of a door?

The explanation is found in a consideration of what causes the smoking, viz., that the current of air down the chimney is able to overcome the lifting power of the heated air at the bottom. When a window is opened, the heated air in the upper part of the room will escape, and it is quite possible that to replace this, a further downward current may be created in the chimney. When a door is opened, cold air can enter at the ground level; this is drawn towards the fire, and being heated promptly rises and so helps to create an upward current of air in the chimney.

Which is the most profitable of all nut-bearing trees?

The cocoanut palm, every part of which is put to economic use. From the fat of the kernel, itself used for food, candles and soap are made. From the juice of the bark are made a drink (toddy), palm wine, vinegar, and sugar. The fibrous part of the nut is made into mats, ropes, nets, etc. The shell is made into cups, lamps, spoons, tooth-powder, and lamp-black; the leaves into baskets, hats and roofs, and minor parts into clothes, sieves, and combs. The wood is used for houses and furniture. The leaf-shoots are eaten like cabbages. The English walnut is very valuable. When in full bearing one tree will yield about 300 lb. of nuts. The nuts sell on an average at about 4d. per lb. If only twenty-seven trees were planted on an acre the income would be about £135 per acre.

When was the last of the Great Auks killed? Why are fewer woodcock shot now than in former times?

Why does the use of a fan usually produce a sensation of coolness, and is it possible to feel warmer when being fanned?

Why is it dangerous to sleep very near a lime kiln?

Why did the old tallow candles need constant snuffing, while the present wax and composite do not?

Which trees live longest?

The Microscope.

THE COMMON SPONGE.

THE common sponge, with which everybody is familiar, is merely one representative of a somewhat large family; the features of the various members of this differ very widely, yet they have very marked family characteristics. Structurally, the sponge of commerce consists of a mass of fibres of a horny nature that interbranch and interlace each other throughout the whole of its form.

Sponges belong to the animal kingdom, not the vegetable; at first sight they appear to be extremely complicated, but their real nature may be conceived if we take the view that a sponge is not a single organism, but is a colony or aggregation of partially independent ones, which have the power of secreting for themselves a hard framework or skeleton, by which the whole structure is supported.

A sponge is composed of two distinct parts, the *skeleton* and the *sponge-flesh*; the article with which we are familiar is really the former, from which the whole of the other has been removed.

During life, this skeleton is entirely clothed with sponge-flesh, a gelatinous covering resembling white of egg; this is the animal element. The microscope shows this slimy sponge-flesh, in the living form, to be composed of masses of *sarcodae*, and minute processes of this are responsible for the provision of food for the whole; this is effected in a very interesting manner by a water-circulating system by means of the apertures throughout the structure, and these canals maintain a constant current of water through its every part.

Professor Huxley compared a sponge to "a kind of subaqueous city where the people are arranged about the streets and roads in such a manner that each can easily appropriate his food from the water as it passes along."

In the baby period of its life the sponge is a "free-swimmer," but it loses its power of locomotion as soon as it affixes itself to a suitable object.

Interesting although the common sponge is in its physiological character, the interest that it provides microscopically is only microscopic in comparison with that of some of its relations.

With some of these the skeleton, instead of being a plain horny structure, is made up of "spicules of silice"—a glass-like material resembling flint, and in some species these are of really beautiful form individually: one the "glass rope sponge" (*Hyalonema mirabilis*), from Japan, provides spicules that are varied in shape—anchors, dumb-bells, stars, crosses, needles, fir-trees, and many other pretty things being represented; the common sponge, however, is quite devoid of spicules. One of the most charming members of the sponge family is the lovely "Venus' Flower-basket"—the beautiful cornucopia-like form of which is composed entirely of these glassy spicules, interwoven and interlaced together with marvellous regularity and design.

In our desire to cater for the tastes and the interests of microscopists, we should be pleased to make note of anything that is new in connection with instruments, objects, or literature pertaining to the hobby, if opticians and publishers will communicate same to us.

A correspondent with somewhat extensive practical experience with the microscope, offers assistance to such of our readers as may desire elementary instruction or advice.—Address Micro, care of THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C.

Week's Wild Life in Pictures.

(See page 217.)

The Woodpigeon—Silver-tipped Green Seaweed—The Rook at Home—Sword Razor-shell—Catkins of the Alder and Hazel—the Goshawk.

ONE of the welcome signs of coming spring now is the deep cooing note of the woodpigeon (1), coming from a dark cluster of pines, or some ivied trunk in a sheltered grove, for the woodpigeon, or ring-dove, as it is often called, because the white patch on each side of the neck suggests a collar, is one of our earliest nesting birds. It has two kinds of love-music, one the five-syllabled coo, which has been compared to the phrase "Take-two-cows-laffy," and the other a single, deep note slowly repeated. The former is used when the bird is wooing a hen bird, with appropriate antics, the latter when the bird is calling its mate, or when both are nesting side by side.

2.—This silver-tipped green seaweed grows in dense tufts on the rocks, and can be distinguished by the silvery ends of its fronds from the round tufted seaweed which grows between water-marks on the coarse olive-coloured seaweeds known as tangles. The silver-tipped kind is also larger, stouter and more branched than the other. Both are pretty yellowish-green in colour, but they fade very soon and lose their fine glossy look when dried. Both are found in plenty on the beach after the storms, common at this time of the year.

3.—The noise of the rooks, busy with their nests, is another welcome sign that February may be counted as the beginning of the spring; and, as with the woodpigeons, most of our British rooks will have eggs in their nests before the last of the foreign birds which came over to spend the winter in Britain have returned home. Carefully watching the rooks at this season, before their proceedings become partly hidden by the growth of the new leaves, you discover much that is of puzzling interest—more than two birds sometimes visiting one nest, and the same bird visiting more than one nest. As with other birds which nest in communities, there seems to be some laxness in the domestic rules of a rookery.

4.—Razor-shells are always very common objects of the seashore, but especially now, after the storms of the early year. They are easily distinguished from all other shells by their long, narrow shape, gaping at both ends when the two halves of a complete shell are brought together. The different kinds of razor-shells are also easily distinguished from each other. Our picture shows the Sword Razor-shell, which is nearly four inches long, curved like a sword; and when the two halves of the shell are brought together they make a tube. The Thin Razor-shell is also curved, but is less than two inches long and nearly flat when closed together. The other two British kinds are not curved, but straight; one measuring eight inches and the other five inches in length. If you walk along the sandy shore at the lowest tide you often see little squirts of water from the sand in front of you; these are caused by the sudden retreat of razor-shellfish down their deep burrows. A little salt dropped into a burrow will cause the creature to come up again to eject it, when its retreat can be cut off with a spade. This is the best way to secure a perfect specimen for examination.

5.—At this time the alder's dangling catkins of male flowers, which were formed last autumn, begin to grow longer towards flowering, and at the same time the stiff, budlike catkins of female flowers also show signs of growth each at the end of a little stalk, while the previous year's old catkins, which have shed their seeds or have been rified by birds, still remain on the twigs, like hard and blackish cones. Before the sticky young leaves, from which the alder gets its name of "glutinosa," shall be fully open, the wind will

have scattered the pollen-dust from the ripened male flowers, and the seed-bearing cones of next autumn will begin to be taking shape.

6.—The hazel is earlier than the alder in its flowering, and this picture shows how, when the weather has permitted, the smooth, tight catkins that were pictured in a previous week's "Wild Life" have become loose and fluffy with tiny yellow male flowers. At the same time the hidden clusters of female flowers in their urn-shaped buds on the same twigs, are seen in the illustration to have thrust forth their little red fingers to catch the wind-carried pollen-dust.

7.—The powerful goshawk is much more rarely seen in Britain in the spring than in the autumn, as though few of the young birds which travel south-westwards for the winter survive to make the return passage. Now and again, however, a specimen like that in the picture is winged and taken. Like the sparrow-hawk, shown last week, the goshawk differs from a falcon in its relatively long legs and short wings; and from the sparrow hawk it differs in its stronger build, with stouter talons and more cruel beak. If you look at a sparrow-hawk's foot, you will see that the middle toe is extraordinarily prolonged, for clutching small birds, while the goshawk's is of moderate length and stout, for gripping larger game. Its name, meaning "goose" hawk, shows how far it ranks above the "sparrow" hawk in power as a bird of prey.

Uses of Wild Barberry.—From the berries of the barberry a delicious preserve is made, and a yellow dye is procured from the inner bark, while in the old days, probably from their colour, the roots were used as a cure for jaundice. This virtue was, however, purely imaginary.

Owl's Day-time Chorus.—Mr. Hudson, in his "Birds and Man," says that in a certain oak-wood much frequented by brown-owls, these birds have a habit, during dull or wet weather, of breaking out into a rude chorus or concert, generally in the forenoon.

British Wild Life Stereographs

3d. EACH, POST FREE.

1, Carrion Crow's Nest; 2, Puffin Found at Home; 3, Dabchick's Covered Nest; 4, Dabchick's Eggs Uncovered; 5, Wood-Leopard Moth; 6, Young Cuckoo; 7, Sedge-Warbler's Nest; 8, Baby Peewit; 9, Nest of Chaffinch; 10, Young Thrushes; 11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat; 21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs; 31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

2d. EACH, POST FREE.

WILD FLOWER SERIES, 2s. 6d.

Ready Immediately.

1, Musk Thistle, Wayfaring Tree, etc.; 2, Sweet Woodruff, in bloom; 3, Wild Hyacinth and Dewberry Bramble; 4, Broad-leaved Garlic and Yellow Dead-nettle; 5, Dandelion, in fruit; 6, Red Campion, amid woodland herbage; 7, Butter-bar; 8, Wood Sorrel amid herbage; 9, Cuckoo Pint; 10, Wild or Do; Rose.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

NORTHERN LIGHTS.—Zodiacal light or aurora borealis seen very distinctly on February 9th and 10th from Leicestershire, Lincolnshire, Gloucestershire and Southern Scotland. —(Various readers.)

BUSTARD, seen near Winchester, February 7th.—(G. Nossworthy.)

RED-THROATED DIVER, shot on the Orwell, near Ipswich.

HEDGE-SPARROW, choked by a large wood-louse it had tried to swallow, Cheltenham, February 2nd.—(Skarratt.)

WOOD-PIGEON, with 49 large acorns and 11 ivy-berries in crop, near Torquay.—(G. C. Siedham.)

MOORHENS, "Flock of six or eight migrating from one water to another, flying very high," near Kidderminster.—(Mrs. C. A. Allen.)

GULLS, of several kinds, **FIELDFARES**, and **REDWINGS** are recorded from many places as crowding into towns and haunting gardens close to houses during the severe weather.

London Notes.—**WATERFOWL**, mostly duck, about 300, on the reservoir, Stoke Newington, February 7th. They had been spending the days there for some time.—(H. Cosens.) **REDWING**, in Kensington Gardens, February 5th.—(Olive Franklin.)

Early Nests.—**HOUSE-SPARROW**'s, near Manchester, February 10th.—(E. V. P. Simpson.) **ROBIN**'s with three eggs at Little Baddow, Essex, February 1st.—(Essex Weekly News.)

Birds' Song.—**SKYLARK**'s recommenced, February 3rd, Aboyne, Aberdeenshire.—(Seton P. Gordon.) **BUSHEY**, Herts.—(A. C. K.) February 8th at Banstead, Surrey.—(E. C. Jannar.) February 9th, at Horsham, Sussex.—(R. C. Knight.) February 10th, near Manchester.—(E. V. P. Simpson.) Near Malton, Yorks.—(C. Gascoigne.) **BLACKBIRD**'s recommenced, January 28th, near Malton, Yorks.—(C. Gascoigne.) **COAL TIT**, February 10th, Chipping Sodbury, Gloucester.—(M. Dowding.)

Marked Birds.—**SPARROW**, one quite black, and one all white with black eyes, with separate flocks near Melton Mowbray, Leics.—(G. Nall.) **BLACKBIRD**.—The blackbird with a white head recorded by Mr. Nicol Hopkins as haunting a garden at Darvel in Scotland for three successive winters is identified by Mr. E. R. Paton as the same bird which has bred for three successive summers at Hareshawmuir Lodge in the same district. This is the third instance in which marked blackbirds recorded in THE COUNTRY-SIDE have been found to spend their summers and winters in different places in the same neighbourhood. The discovery of such habits, possibly common to all blackbirds, is better than putting the birds in a glass-case.—(Ed.) **JACKDAW** with outer half of each wing white, and **STARLING** with white bars on wings near Margate.—(H. Waters.)

THE ASSOCIATION OF CYCLE CAMPERS.

THE annual general meeting of the Association of Cycle Campers was held at the Eustace Miles Restaurant, and there was a large attendance of members, many of whom were curious to see what attractive dishes could be prepared when limited to vegetables.

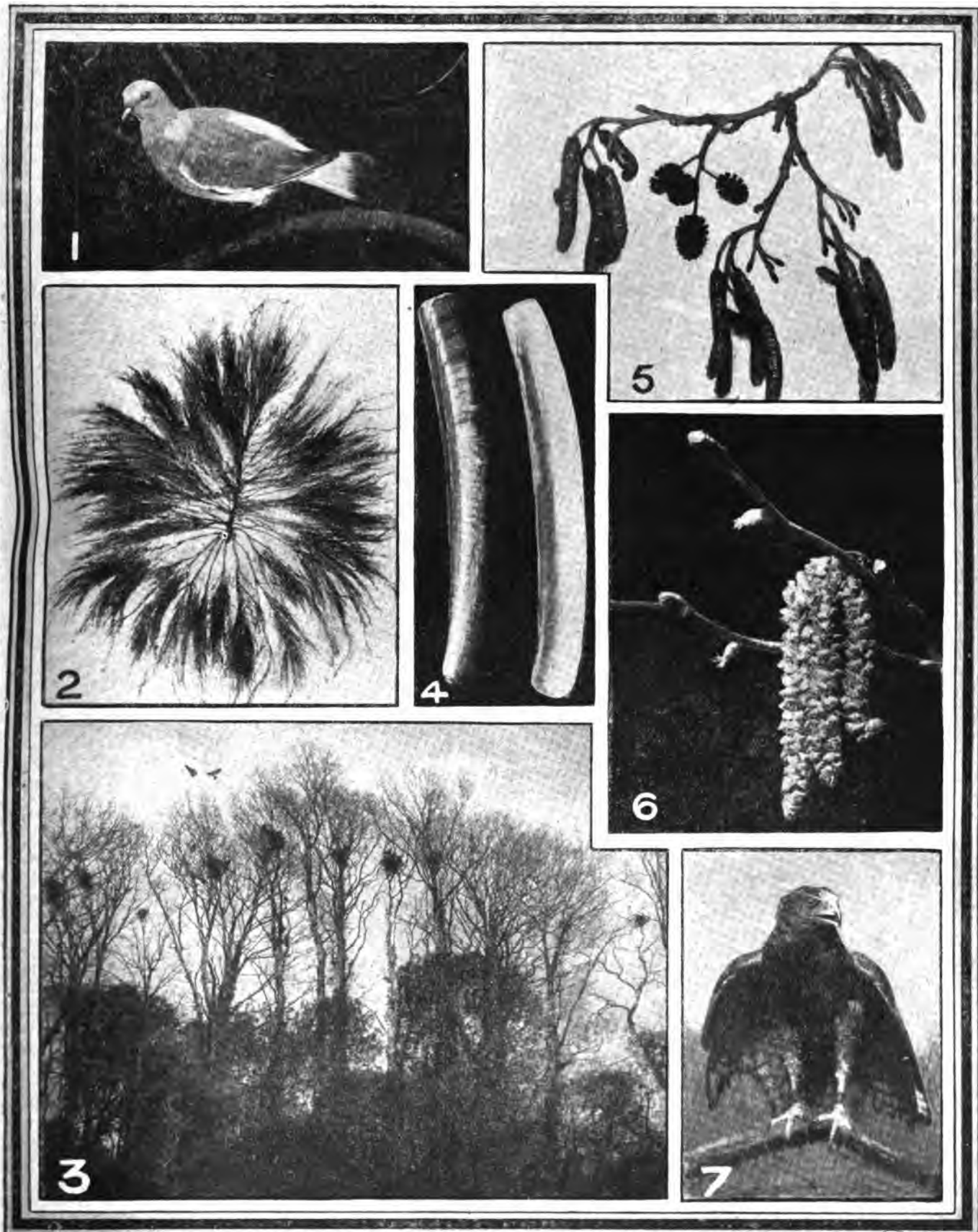
The retiring secretary, Mr. H. Biden-Steele, reported that the membership had increased from 206 to 354, and that 115 camp sites were now available for members, thus making a camping tour easy for novices and old members.

Ladies are admitted to membership, and have so taken up the sport that a ladies' section has been formed.

The freedom of the open-air life of camping appeals to a very large number, and those of our readers desiring further information are recommended to write to the hon. secretary, Mr. A. P. Moeller, 42, Hampden Road Hornsey, N.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 216.)



1. Wood-pigeon, *Columba palumbus* (B. Hanley). 2. Silver-tipped Green Seaweed, *Cladophora arcta* (J. H. Crabtree).
 3. The Rook, *Trypanocorax frugilegus*, at Home again (W. P. Westell). 4. Sword Razor-Shell, *Solen ensis* (J. H. Crabtree).
 5. Catkins of Alder, *Alnus glutinosa* (V. L. Royle). 6. Male and Female Catkins of Hazel, *Corylus avellana*, in Full Bloom
 (G. Parkin). 7. Goshawk, *Astur palumbarius* (W. T. Meelows).

Amateur Photography.

Uses of the Electric Release.

By W. ROBINSON SMITH.

LAST week we gave some details as to how the electric release might be fitted to any camera. Now we shall say something as to the uses to which our machine may be put. There are birds which it would entail very great discomfort on the part of the operator to take from concealment. For instance, the kingfisher or the coot, where the nest, if not actually in the water itself, is in such a position that the operator will require to be so in order to remain in hiding. There are many pleasanter places to lie in than ditches or marshes.

In such a case as this when it is necessary to carry wires through water, for a short distance at all events, these wires which are submerged, or even touching the water, at any one point, are liable to leak or, to use the technical term, to create a "short circuit," thereby cutting off the current before it reaches the camera. To prevent this the wires must be properly insulated with some waterproof insulation.

It is a great saving of time to leave one's camera to await the often return of the master or mistress of a woodland dwelling than to have to wait oneself while the precious moments in which some new wonder may be discovered are fitting by.

Our photographic illustration is that of a thrush entering her nest, and was obtained by setting the camera and retiring with the wires and then watching from such distance as did not disturb her in the least.

With such familiar birds as the one in our illustration it is scarcely necessary to conceal the camera at all or harmonise it in any way with the surroundings. If there is any doubt as to the degree of familiarity of the bird in question a few twigs and leaves round the camera usually are found sufficient.

It were hopeless to attempt to enumerate all the uses to which this release may be applied. I've seen places where a camera could be lowered down a cliff to take a photograph of a colony of sea-fowl all by itself so to speak. Yes, and with no unreasonable chances of a good result, too!

But to return, the idea is that the camera be focussed on the nest, concealed, and the wires lead somewhere out of sight of the nest, round a corner of a hillock or elsewhere. Anywhere, in fact, that is suggested by the knowledge of the degree of wariness which may be expected in the particular bird. There the end of the wires with the switch or button is left for a little to enable the bird to settle down if that is desired, or until she is seen standing beside her nest. Then, when by means of field glasses or by signal from a friend with field glasses

stationed at a distance where he can both see the bird and be seen by the operator, the circuit is completed and the picture an accomplished fact.

Again, one may have located a particular bird's favourite perch—a spotted fly-catcher, for instance. Hide the camera focussed on the perch and release from a distance that will not have disturbed the unconscious sitter or even have rendered her uneasy.

And so on, each reader can doubtless suggest to himself the many marvels



Photo.]

[W. R. Smith.

Thrush Entering her Nest.

This is an example of a photograph taken from a distance by means of the electric release.

which may be performed through being able to control his camera (even though only for a snapshot) from a distance.

Our Photo. Competition.

TWELVE GUINEAS IN PRIZES.

Photographs intended for the February competition should have their titles and names and addresses of their senders written clearly *on the back*, and should be addressed "Photo Editor," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Additions to the Natural History Museum.

The large Cuban Anolis—Colour Variation—The Nyassa Bush Pig.

By R. Lydekker.

OF the numerous and valuable specimens of vertebrates presented from time to time to the Museum for exhibition purposes by the Hon. Walter Rothschild, the most recent are three examples of a species of iguana, known as the large Cuban anolis, or chameleon iguana (*Anolis equestris*).

These lizards take their second name from their chameleon-like power of changing colour under different circumstances of environment; the extreme ranges of variation in this respect extending from dark brown to pea-green. Mr. Rothschild's specimens are intended to illustrate this colour-change; two being in the green, and one in the brown livery. Except that in both cases there are the same white flecks on the head and back, the two phases are so different, that the visitor might well be excused if he mistook them for distinct species.

In the case of specimens in captivity, at any rate, the brown livery is assumed in daylight and the green dress at night. The brown condition is brought about by the migration of dark pigment-granules from the lower layer of the skin to the surface; while the green phase, which appears to be the condition of rest, is due to the withdrawal of the same granules to the deeper layer.

According to an American observer, when a brown anolis is placed in the dark, it invariably turns green in about five and twenty minutes, while, when a green one is exposed to the light, it nearly always changes to brown in the short period of about four minutes. Marked differences in the length of time occupied by the change, have, however, been recorded; and the change from brown to green is often slower at the commencement of an experiment than after it has been continued for some time.

The latter circumstance tends to the conclusion that the period of colour change is shortened by practice, or exercise, and it has also been inferred that a low temperature favours a migration of the pigment granules towards the surface of the skin, while a high one tends to the opposite condition.

As the anolis iguanas have no near affinity to chameleons, it is evident that the power of changing colour has been acquired independently in the two groups; and it is therefore only what might have been expected, that the nature of the process differs fundamentally in the two instances.

Some years ago Sir Harry Johnston discovered in Nyassaland a bush pig, differing from the South African representative of that ugly group of swine by its reddish (in place of blackish) colour. In consequence of this difference the Nyassa animal was long supposed to be a relative of the still more brightly coloured red bush-pig, or river-hog, of West Africa; but more careful examination showed that it was really a red phase of the Cape species.

Hitherto the Nyassa bush pig has been represented in the exhibition gallery only by an immature specimen (the gift of Sir Harry Johnston himself), but a fine adult boar has been recently added to the series. It is noticeable that the adult is somewhat less rufous than the half-grown specimen.



Livestock for Profit and Pleasure.



POULTRY.

How I made my Poultry Pay.

MANY people who have kept a few fowls in their back garden have, after a short time, given them up, on account of their not paying. This is, however, a mistake, as by a little care and careful feeding they can be made to pay, even in the most limited quarters.

I started with four hens of mixed breeds, and housed them in a house about 2½ feet square with an open run adjoining about 9 feet by 3 feet. I littered the bottom of the roosting quarters with moss litter, and kept it extremely clean, digging the run over as soon as it became at all foul. I gave them a warm breakfast, consisting of Spratt's poultry meal and sharps, and allowed each bird a piece about the size of a hen's egg. At mid-day I gave them green food *ad lib.*, with a little meat, and in the evening grain, such as wheat one night, oats the next, and so on, changing it as soon as they seemed to tire of one kind.

In the morning I also used to change the menu, giving them ground oats and sharps, instead of Spratt's, if they seemed to require a change. On this treatment I had plenty of eggs nearly all the year round, except when the birds were moulting.

I also reared several chickens in very limited quarters, a small coop, and a run attached to about 21 inches in length by 18 inches in width, and fed on some of the patent foods, such as Spratt's or Armitage's. The first meal, however, consisted of boiled rice, which they enjoyed. On this treatment I am pleased to say I never lost one, and they all grew up strong, healthy birds, the pullets starting to lay when from five to six months old, and continuing to do so splendidly. The cockerels were also ready for killing at about four months old: The cost of keeping the mature birds averaged about 1d. per head per week.

Wild Duck Rearing.

WILD duck are the easiest of all game birds to rear. Anyone with a suitable piece of grass field may enjoy the pleasure of having ducklings in his possession which will at almost any time command a ready sale. Eggs of the wild duck are not expensive, and many advertisements appear each year in the sporting papers, some of which guarantee 90 per cent. fertile. I believe greatly in Buff Orpingtons as foster-mothers. They are very good sitters and not as fussy as some other breeds.

A very good way of making a nest is to round a shallow hole in the ground under a bush and to put some dry moss and grass in as lining. I then put a box with no bottom and the top on hinges over the nest and leave the earth underneath to dry. To bore some holes underneath the nest with a stick and to pour some "Renardine" down is a good way of keeping away insects attracted by the heat of the hen, after which moles, when boring, often disturb the eggs. Having set the hen on, say, a dozen eggs, she will need to be taken off every morning for about a quarter

of an hour and given drinking water and a handful of maize. Care must be taken in putting her on again that she does not in her hurry break any eggs. Suppose one should be broken the rest will have to be sponged with warm water. They require damping oftener than hens' eggs as the parent duck always returns to her nest with wet breast-feathers. Now and then they should be sprinkled with Keatings' powder to keep away parasites. Ducks' eggs take 28 days to hatch.

The ducklings require no food for the first 24 hours of life. One of the best meals in the market is Messrs. Gilbertson and Page's "Hertford," which only needs scalding in boiling water to prepare it. At first the ducklings require to be fed five times a day with the meal, which should be given wet enough not to be sloppy, and also warm for the first week. They should be let out of their coops as early as possible to catch the slugs and worms before the dew is off the grass. The ducklings should not be given water to bathe in. They should be given a drink after each meal in a shallow dish with wire-netting over it so that they can get only their heads through.

The water should be taken away whenever they have had enough. On a very hot day a turf may be cut out and water put in. The ducklings will then amuse themselves by searching for insects in the muddy water. Be careful to shut them in when it rains hard as they are much subject to cramp. When the ducklings are a fortnight old their meals may be reduced to four a day, and when they are a month old to three a day. A little lettuce chopped fine and now and then mixed with the meal forms a welcome change and is very beneficial.

If the ducklings are intended for stock purposes when seven or eight weeks old they may be removed to the water. A few hens and a coop or two should be placed near at hand to keep them from wandering. For a week or so before the removal they should be broken to grain. I believe in wheat for a start and maize afterwards. Continue to give some soft food as a morning meal for a week or two and maize at night. When the ducks can fly they require only one meal a day, which should be of maize. Never stop this meal as it helps to keep the ducks at home.

DOGS.

THE NATIONAL BEDLINGTON TERRIER CLUB, of which Lord Decies is president, is issuing a new standard of points, and judging from the grand entry of this variety at Cruft's Show, it would appear that the cloud of faking and ignominy, under which the Bedlington has been hidden and put back for many years past, is breaking into the proverbial clear blue. No doubt the grand show and the general utility of the club in suppressing the trimming of these game terriers will bring them once more to the front rank of a public favourite.

It is interesting to note the list of entries at Cruft's Show, if only to gain an object lesson in the winter fashions of dogs, as on the 13th those breeds which foregathered in greatest numbers were in order as named: Fox terriers, 302; Spaniels, 325; Bulldogs, 270; Retrievers, 252; Pomeranians, 160; Collies, 139; Airedales, 127; Great Danes, 125; Scottish Terriers, 121; while Gordon Setters could muster only four. Her Majesty headed the list of exhibitors.

The council of representatives having at last consented to allow a lady on this council to represent the Ladies' Kennel Association

Incorporated, that body elected one of their committee to the post at their meeting which took place at the Agricultural Hall during the progress of the dog show.

The case of the "all-round judge" is advocated in an editorial of *Our Dogs* of February 9th. Among the various arguments given for his survival the writer declares: "The all-round judge of experience, although he may not be quite so well versed in some breeds as some specialist judges, is, as a rule, sound in his ideas of the requirements of each breed, is free from fads and fancies, and broader in his views which have been acquired by real practice, in what have made a profession. Certain types of specialist judges have often made awards which, being so farcical, have brought ridicule upon specialism and retarded its progress.

A kennel encyclopædia, edited by Dr. Sydney Turner, F.L.S., chairman of the Kennel Club, will shortly be published in parts. The first, letter A, will comprise 21 articles under that letter and its price is 5s.

CATS.

IT is not generally known what very high prices are asked and given for really good specimens of cats, both long and short-haired. Quite recently a blue-eyed white Persian was sent over to America, the price paid being £60. An almost unmarked silver kitten has been disposed of for £25. The sum of £50 was paid for a short-haired brown tabby which was splendidly marked. An orange female Persian cat of prize-winning renown was sold for £25. There are no doubt many valuable cats in cottage homes, the owners of which would be perfectly astonished if they thought they could fetch in shillings what they might realise in pounds.

Siamese cats are difficult to rear in our damp and changeable climate. They resemble pug dogs in colouring. When born they are quite white and gradually turn to a pale fawn. Their ears, legs, and tail should deepen to a dense chocolate brown, and the face assumes the same dark coloured mask. Blue eyes are essential in Siamese cats, and a kink in the tail is not considered a defect.

Every large liner carrying passengers has on board from six to ten cats, these being apportioned to different parts of the boat, and their rations appear as expenditure on the company's books. A few first-class saloon cats have become quite celebrated, especially in the long distance boats to India and Australia.

CAGE BIRDS.

The Show of the Season.

BY the time these notes appear, the great National Bird Show will have just closed its doors on what is always the bird breeders' and exhibitors' great event of the season.

The number of canaries entered totalled about 1,100; British birds, 500; and mules and hybrids, 150. It is curious to note that not a single Belgian canary was entered, yet this variety has long been termed the "King of the Fancy." No fewer than seven hybrids between the canary and bullfinch were entered, though it is but a few years since this cross-bred was so extremely rare that the possibility of producing it was generally denied.

In addition to the above classes there was also a big collection of foreign species on view, and here was to be found no fewer than seven

(Continued on next page.)

Cage Birds.

(Continued from page 219.)

different kinds of hybrids between foreign species. A pair of Japanese tits were also entered. But perhaps the most notable entry in this section was a red-sided Eclactus Parrot, which was valued by its owner at £600.

Lost Varieties of Canaries.

Considering the height of popularity to which canary breeding has arisen it is strange that any variety should have been lost in recent years. It is a fact, however, emphasised by the absence of the lordly Belgian from the Great National Show, that two other varieties have become extinct in comparatively recent years. The London Fancy, one of the most

ancient and handsome varieties we ever had, is for all practical purposes quite extinct. Its rich, clear, yellow or buff body plumage set off by deep black wings and tail, always made it appear a conspicuously lovely bird. Then there is the Blue Lizard canary which seems quite lost to us, though its *confrères*, the Gold and Silver Lizards, are still fairly common.

A New Introduction.

It may be a trifle compensating for the loss of the breeds already mentioned and decadence of the Belgian that we seem to be having a new breed popularised. This is known as the Dutch Frill, and is a distinct novelty to us. In reality it is quite an old-established breed on the Continent, but it is only lately that it has been often found in English bird-

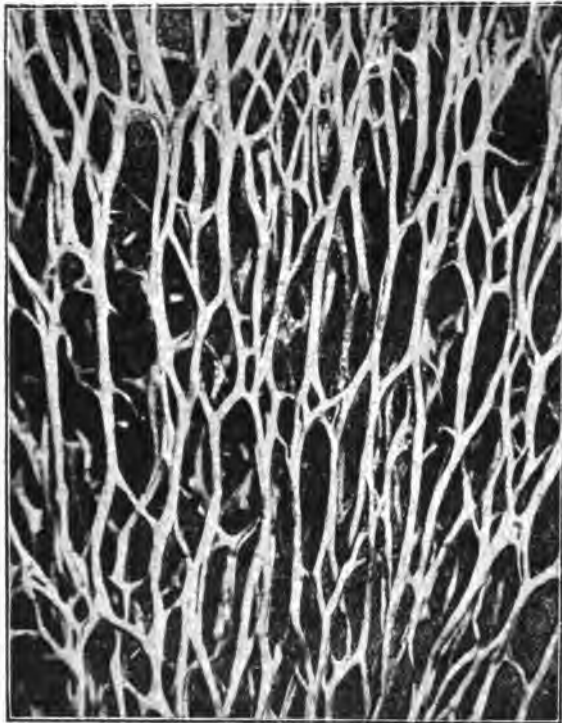
rooms. Its most striking feature is a peculiarly curled, or frilled, condition of the plumage. Indeed, it appears to occupy a somewhat analogous position among cage birds as does the rizzled bantam and the frillback pigeon among poultry and pigeons respectively. Taken altogether its characteristics are peculiarly its own, so that it will be an acquisition to English fanciers. Albeit the loss of good old English varieties of acknowledged beauty is much to be deplored.

The question of selecting mates suited to each other for breeding good specimens must now be deferred until next week, which, however, will be in good time. The inexperienced fancier must not forget the hint already given, that much loss arises from the error of putting pairs together too early.

What is it ?

Remarkable Result of our First Contest.

THE PRIZE DOUBLED.



Magnified Section of Loofah.

THE result of our first "What Is It" skill contest has been most astonishing. Of the very large number of competitors who forwarded solutions more than 1,000 correctly named the photograph on page 168 as a magnified portion of a loofah used in our bath rooms.

It is obviously impossible to divide the prize among so many, and we have therefore decided to double the prize, making it £2, and to have another competition for the WINNERS IN THE FIRST CONTEST ONLY.

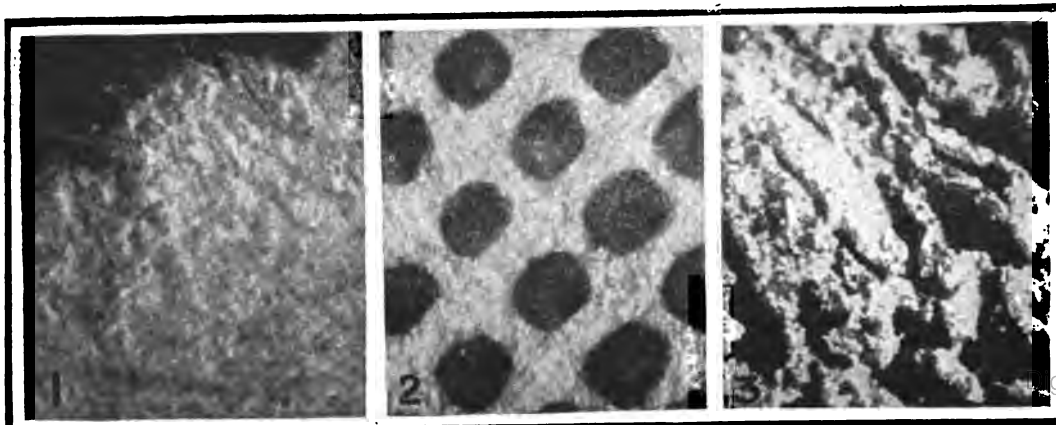
Below are three enlarged photographs, numbered 1, 2 and 3. Those who correctly stated that the first "What Is It?" was a portion of a loofah, should cut these out, write on a slip of paper exactly what they are, and post to us by February 23rd. To the reader who gives the most definite and detailed solutions to the three pictures we shall award the prize of £2. If two or more should send exactly identical solutions we shall divide the money equally.

The Editor's decision must be regarded as final, and the pictures must be cut out and sent with solutions.

Address to "Solutions," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C., on or before February 23rd.



Loofah and Section.



£2 is offered for the solution of these photographs.

Points to Remember.

Only those who correctly solved the first problem as a section of loofah are eligible to compete in this contest.

Be careful to give the most definite solution you can to each of the photographs.

You may send more than one solution to each picture, provided you send with each a separate copy of the reproduction cut from "The Country-Side."



The Garden.

Work for the Week.

Sweet Peas.

THE cult of the sweet pea has so prospered of late years that these charming flowers are now certainly the most popular of the hardy annuals. Whilst, if the sweet pea enthusiast has not made an autumn sowing, he will certainly have advanced his preparations for the coming season before now, the majority of people are content to rely upon sowings made in early spring. The choice of varieties is nowadays truly immense, and more satisfactory results will be obtained by growing the best sorts separately in rows or clumps, than by simply sowing a mixture. With the remark that sweet pea "novelties" sometimes turn out sad disappointments, we commend the gardener to a study of the choice offered by one or other of the leading firms of seedsmen. Dorothy Eckford (pure white), Phyllis Unwin (pink), King Edward VII. (red), Lady Grisel Hamilton (pale mauve), Navy Blue, and Black Knight (maroon) form a very good half-dozen varieties. Sweet peas have, alas, three formidable foes in the slug, the mouse, and the sparrow. To checkmate the mouse it is a good tip to immerse the seeds in paraffin before sowing, whilst the slugs must be guarded against by the usual precautions of soot and lime and by trapping. The sparrows are the worst of the three; indeed, their provoking wantonness is apt to tax the ingenuity of the cultivator to the utmost. It is therefore advisable not to entirely depend upon one sowing. Sweet peas should not be grown upon the same ground two years in succession. Soon after the plants appear above the soil support must be given. The ground where they are to be positioned should be well manured and deeply cultivated.

It is interesting to learn that we are promised the valuable novelty of winter-blooming strains of sweet pea.

Dahlia.

Should it be desired to considerably increase the stock of any varieties which are particularly liked this may readily be effected in the following manner. Place the roots which have been kept through the winter, under a stage in a warm greenhouse, or on a mild hot-bed. Shoots will soon be thrown up, and the tops of those that are most suitable for the purpose are taken for cuttings. Planted in sandy soil singly in thumb-pots, or round the edges of larger ones, and placed in a close frame at a temperature of about 60 degrees, these will quickly root. When well established they must be kept growing, and gradually har-

dened off for planting out early in June. Other shoots will spring from the roots in place of those taken off.

Chrysanthemums.

The first batches of cuttings should be nicely rooted by now, and their first potting-up must on no account be delayed. Three-inch pots are the most suitable to use, and a compost composed of three-parts of fine fibrous loam, with one part each of leaf mould and well-decayed manure, also some sand. After potting, the young plants will do best in a frame

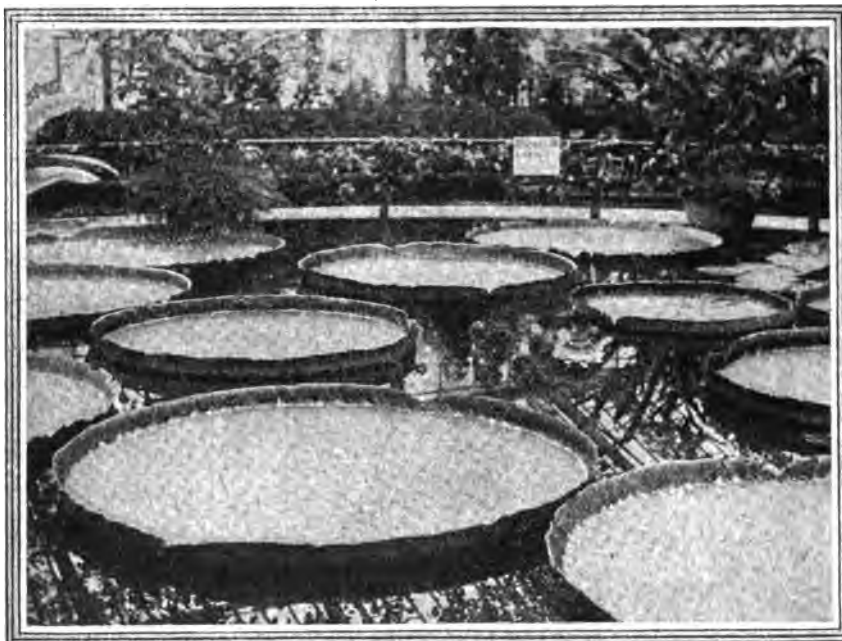


Photo.]

Victoria Regia at Kew.

[Copyright.

or low pit from which frost can be excluded, and they must be afforded plenty of air.

Some growers do not raise their plants by taking cuttings early and growing them on the cool system, but insert cuttings in mid February, or later, in boxes placed upon a mild hot-bed. Although the plan is generally not favoured by growers for exhibition, we have seen excellent results gained by its adoption. Should any readers be wanting more plants than they have got rooted they can quickly raise them by this method.

Hedge Planting.

A well-grown hedge is in all ways such a satisfactory thing, that where a substantial boundary barrier or shelter is necessary a hedge is generally greatly to be preferred to a wall or any kind of fence. Whilst a raised wall has its uses in gardening, and from one side a sunk wall has the merit of invisibility, the same cannot be said of fences. We would in particular condemn the familiar iron rail fence as being ugly, and therefore quite out of place in a garden.

Hedge plants of the best size for planting can be obtained at such low rates in quantity from nurserymen, that the hedge scores greatly

in point of cheapness. It is mistaken policy to put in large plants, thereby hoping to obtain quick results, for these rarely do well and are invariably out-distanced by two or three year old seedlings in the end. These should be planted thickly in a double row in ground which has been previously prepared by trenching and manuring, from now until the end of March being the best planting time. Until thoroughly established they must be carefully looked after. It is probable that watering will be required, and the soil around their roots must be kept open and clear of weeds with a hoe or fork. It is a common mistake to be too sparing in the use of the knife. Thorns, for example, should be cut back nearly to the

ground the first year after planting, and hedges of every description require drastic pruning to keep them thick at the bottom. Where a stout barrier is immediately required, the hedge can be planted upon a bank of earth, and if this be of sufficiently generous dimensions the hedge will grow well upon it.

What to plant is a matter which often occasions some perplexity. The five hedge-plants most commonly employed and generally suitable are whitethorn, holly, yew, privet, and beech. It must be remembered that holly and yew are slow growing, and that the privets make an ornamental rather than an impenetrable hedge. We have a high opinion of beech as a hedge plant, but it does not thrive upon every sort of soil. The myrobella plum, hornbeam, and box also make good hedges. G. T.

A Wonderful Plant.

THE VICTORIA REGIA.

THERE is no more wonderful plant at Kew in summer than the Victoria water-lily, with its huge leaves like table-tops floating on the surface of a round tropical pool, and its fragrant white flowers as big as a cabbage. With every leaf there comes a flower which lasts two days, and as there are two flowers every week from the first week in July to mid-October, it will be seen that the number of leaves and flowers produced in a year is remarkable.

Each leaf is from six to seven feet in diameter, and its stalk is like a rope. There are strong spines on every part of the plant, except the upper surface of the leaf. Those who visit Kew next July will see the plant, which will grow from a seed sown this week, this water lily being an annual. It is a native of Brazil, where it sometimes covers large areas of water. It has been grown in the open air in England in a tank heated artificially. We have seen a child comfortably floated on one of the leaves.

The Garden.

THE MAKING AND KEEPING OF LAWNS.

A Setting for the Garden.

A GOOD lawn is the only acceptable groundwork or setting for the garden.

We have come to look upon green-sward as the natural clothing of the soil. Where there is no grass we say the ground is naked or bare; where there is a carpet-like turf the eye finds rest, and one's sense of art, perhaps we ought to call it one's love of nature, is satisfied. The grass lane in the country, the grass path through the wood, are somehow the accompaniments of rest and peace. The turf-clothed grave is the best covered "bed" we can hope for at the end.

Grass is the only possible carpet in an English garden. In countries where grass is less happy there is always a striving after the grass turf, but in the British Islands grass is so persistent that if left for a year or two our borders and paths become clothed with it.

Rarely is there any difficulty in getting a good sward if only the grasses that are best adapted to the soil and conditions are allowed to prevail. It is only when we try to make the wrong kinds of grasses grow that turf in the garden becomes troublesome and a disappointment.

Treatment of Turf.

Then there is the treatment of the turf after it has been formed. Some people expect grass to live and grow where it is being perpetually walked over and ill-used. That grass will not bear this is evident from the sheep-walks on the moor sward, the paths over grass fields, which come and remain if only a few people walk over them each day; indeed, we have known a clearly-defined path to appear on a field where only one man crossed it twice a day. The small grasses are merely soft herbs, easily bruised, and they are easily trodden out of existence.

A good lawn is a rich possession, worth a great deal of care. That it can be preserved for a very long time is shown by the beautiful green carpets which cover the enclosures of the colleges in Oxford and Cambridge, and the closes of cathedrals. What would such places be without grass turf?

Preparing the Ground.

It is quite certain that if ground were dug, raked over, and left for a year or two a turf of grass would be formed. This, however, is too slow a process, and we either get a lawn at once by laying turf brought from a neighbouring meadow or moor, or we sow seeds in quantity of certain grasses which are known to be best for the purpose. In either case the preparation of the ground is the same.

The first operation is the disposition of the surface. It is not by any means desirable in all cases to have a level lawn; in some situations anything approaching a level surface would be altogether wrong. A lawn as part of the garden simply may be sloping or undulating, and be just as effective as when it is level. On the other hand artificial slopes or undulations in an otherwise flat garden would be an utter mistake. Convenience of walking and keep must of course be considered.

Drainage.

Drainage, which would be unnecessary for soil over gravel or with a gradual slope, would have to be provided in heavy or sour soil. The simple agricultural method is usually sufficient; that is, rows of drain pipes 15 feet apart and 2 feet below the surface should be set in and led to the lowest point, preferably a ditch or main drain. It is advisable to employ for this work a man who has had experience in the setting of drains. The whole of the ground should then be dug over and well broken up, after which it should be well trodden down, selecting a dry day for this, the surface raked level, and as fine as possible. Should the soil be heavy, an inch or so of lighter fine soil might be placed on the top with advantage.

Turf or Seeds?

If turf is to be laid, it will be most likely to turn out a success if it is obtained in the neighbourhood, and, if possible, from soil of the same character as that where the lawn is being formed. Where turf fails it is because the grasses are unsuited to the situation. For this reason it is generally the best plan to sow seeds of grasses at the rate of four bushels to the acre. It should be sown on a still day, otherwise the seeds will not fall regularly. The best time to sow is early in March, although any time until the end of April would not be unfavourable. Some gardeners prefer to sow the seeds in October, and if the succeeding weather is mild and moist the grass then gets well started before winter sets in. The sowing of the seeds must be performed by one who has had some practice in sowing light seeds broadcast. After sowing the soil should be raked over and then a light roller may be passed over it. Birds may be troublesome, but they must be kept off until the seeds have germinated.

The Best Mixture of Seeds.

The particular mixture of seeds most likely to succeed on a given soil is a question of importance. In the first place, the seeds must be obtained from a reliable dealer. It is poor economy to go to the cheapest man. The best mixture can be obtained from the very best seedsmen at 30s. per bushel. This contains seeds of fine grasses and clovers with, if desired, the addition of yarrow, which should always be used for lawns on a light soil. If a mixture has to be selected the following are suitable: crested dogstail, two parts; sheep's fescue, one part; wood meadow grass, one part; white clover, half a part; yarrow, half a part.

Mowing New Lawns.

When the seedlings are three inches high, a lawn mower, set high, should be run over the lawn. This settles the roots and strengthens the growth. At the same time all weeds should be carefully removed. It is not advisable to walk on the new lawn until the grass has grown sufficiently to form a turf; usually spring sown grass may be walked upon the following autumn.

The direction here given for the formation of an ordinary garden lawn may be followed for a tennis lawn, bowling green or cricket field, except, of course, with respect to the surface, which requires to be as level as possible, and clover should be excluded. A somewhat retentive soil is best for these lawns, so that; should the soil be naturally light, a surfacing with a heavy, almost clayey loam will be desirable. This makes a binding firm surface such as the cricketer loves.

Repairing Lawns.

The repairing of lawns requires to be done with knowledge. The garden lawn if worn may be set right by lightly forking over the bare patches, raking them to get a smooth friable surface and then sowing them with seeds in March; or, better still, in September if there is time. This is preferable to cutting out the bare patches and returfing. Should the grass be weak, a top-dressing with basic slag in autumn and again in spring will give it strength.

The best of all dressings is well rotted farmyard manure, but this looks unsightly and moreover it often contains the seeds of dandelions, plantains, and other obnoxious weeds. A good dressing, say an inch in thickness, with meadow loam is also excellent for sprout lawns, and where moss has got hold this soil-dressing will generally effect a cure. Guano, which also should be applied in spring, is another good dressing for grass. The use of chemical manures is not recommended.

Should worms become troublesome they may be got rid of by applying one of the several excellent worm destroyers which are in the market. Should plantains, dandelions, daisies, and other coarse weeds show themselves they may be got rid of by dropping some strong poison such as creosote, from a thin-spouted oil-can on their hearts.

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The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 94. Vol. 4

MARCH 2, 1907.

1d. WEEKLY.

Some Common British Fishes.

Their Interesting Story.

By W. P. PYCRAFT, F.Z.S., &c.

WE are apt to envy, many of us, those who, either for business or pleasure, wander far over the world's great water-ways; and this, doubtless, because

are, there are pages in their life-history which have yet to be deciphered. Much of what has been made out deals with factors which help us to account for their structural difference.

mens of 25 lbs. in weight having been met with, but such are rare. Another curious fact about this fish is that females are about twice as numerous as the males.

The gurnard is among the most interesting of our food-fishes, partly on account of its relation to one of the flying-fishes, but also because of the curious modification of some of the rays of the breast fins which are free and serve the purpose of feet! They are also remarkable because of the vivid colouring which some species display over the body of the enormous breast fins.

The weever is but little esteemed as a food-fish, and has besides an ill reputation, for he is able to inflict most painful wounds, which are made by the front spines of the dorsal fin and a spine upon the gill-cover. No poison organ is known, and it is supposed therefore that the mischief is caused by the mucous which is lodged in grooves along these spines.

Though the two fishes which form the subject of Fig. 2 are useless as food-fishes, they are yet of exceeding interest. It would be hard to find a more repulsive-looking creature than the angler fish.

(Continued on page 227.)



Photos]

Four Common British Fishes.

Copyright.

Reading from the top down they are the three bearded rockling, the gurnard, the haddock and the weaver.

of the tales these travellers tell us of the strange creatures they encounter in the course of their journeyings. For this reason, perhaps, we have become impressed with the idea that most of Nature's really interesting creatures are to be found anywhere rather than within our reach! Yet this is far from being the case, as readers of THE COUNTRY-SIDE are beginning to realise.

Some of our commonest British fishes for example, reveal phases in their life-history of a kind that the traveller could never meet with; while they furnish us with lessons in the great mysteries of evolution as instructive, and as important, as any that may be learned from a sojourn in the tropics, or days of travail in ice-bound seas.

Take the four fishes which form the subject of our first illustration. The first and third of these—counting from the top—are both members of the cod family, which affords the most valuable of our food fishes, yet they are very different in appearance. Common though these two species—the rockling and the haddock—

which brought about so great a change in the habits of the adult.

The young of the haddock are also surface dwellers; and they, like young cod-fish, exhibit the remarkable habit of seeking safety from enemies by sheltering under the great swimming bells of large jelly-fishes! The food of the adult haddock shows a strange variety. Off the Scotch coast, mollusca and crustacea form their staple diet, varied occasionally by other fish. While off the Irish coast echinoderis form their principal dish, and molluscs are but seldom eaten. The haddock, by the way, may attain a considerable size, speci-

time are re-splendent in a livery of silver. One cannot but wonder what are the causes



Photos.]

Two Interesting British Fishes.

Copyright.

The upper one is "the angler" or fishing frog, and the lower the lump-sucker.

Country-Side Notes.

Warham, Norfolk.

God made the country, and man made the town,

What wonder, then, that health and virtue gifts—

That can alone make sweet the bitter draught

That life holds out to all—should most abound,

And least be threaten'd in the fields and groves?

COWPER.—Sent by R. W. Pethen.

“A NEW voice, which seems to sing with meaning, has been added to the feathered choir; for you can never hear the jingle of the yellowhammer, with its curious catch at the end—familiarised in the rustic phrase, ‘Little bit of bread and no cheese’ without thinking of shimmering days of summer, when towns are hot and roads are dusty, but life among green lanes and flower-starred meadows sweet. For it is then that the murmurous music of birds and buzzing insects seems beaten into rhythmic bars by the regular reiteration of the yellowhammer’s metallic trill.

“The wren, who began to sing more than a fortnight ago and then seemed to find that it was not singing weather, has now burst into full song again—a song always so jocund and so musical as to be almost the happiest in birddom. Before the host of summer warblers arrive from oversea, the wren’s song is worth getting by heart; because no other but the skylark’s is so joyous, fast and sweet; and when you cannot see the little cock-tailed singer, you can always recognise his music by the merry ‘Sip, sip, sip, sip’ with which it ends.”—“The Country Day by Day,” February 24th.

In the Wild Birds’ Protection Order for the West Riding of Yorkshire, dated February 6th, 1907, the close time for all wild birds (except the house-sparrow, which has no protection of any kind) is extended from the end of February to August 12th. This, among other advantages, protects for twelve days longer young wild ducks from slaughter under the name of “sport,” when they cannot fly, but are known as “flappers,” because they only flap along the surface of the water.

The lists of birds or eggs which are protected in various ways have, however, now grown so long—130 kinds being enumerated in a single paragraph—that it is surely time for us to reverse our system; and instead of laboriously piling up lists which can never be kept up to date with discoveries of new British birds or very rare birds in new localities, to base our Protection Orders on the principle that all birds and eggs are protected throughout the year, except those which may be killed without loss. Then it would be necessary for those who wish to kill any kinds of birds to give good reasons for their desire; and if the friends of the birds were reasonably active it is not likely that any but game birds, familiar wildfowl, and birds that are injurious to agriculture would anywhere be placed upon the lists.

These would then be shorter and simpler, while birds would be much better protected.

The *Sydney Bulletin* has a remarkably well-edited page of “Aboriginalities” in which interesting facts of natural history are frequently recorded by correspondents; and in a copy sent by a reader occurs a story of an Australian magpie which curiously illustrates the universal potency of the maternal instinct. The magpie was a household pet and on the arrival of a baby it took the greatest interest in the newcomer. It constituted itself the infant’s guardian and was always happiest when perched on the cradle. One day a commotion was heard and the mother rushed upon the scene to find the magpie trying to put a wriggling centipede into the infant’s mouth. She gave the unlucky bird such a thump that it died—her maternal instinct not allowing her to pause and admire the maternal instinct which prompted the magpie to bring a tit-bit to the human nestling.

Among the numerous suggestions made by readers as to features which they would like to see introduced into the paper one which has found a good deal of favour is that I should recommence “The Story of Nature.” Readers of *THE COUNTRY-SIDE* during the first year of its existence will recollect that this “story” dealt with animal life, showing how all forms of animated creatures came into existence, and in what main respects they differ from each other. Now some readers want me to draw in similar words, which all can understand, the genealogical tree of the vegetable kingdom, and others want me to deal in greater detail with some one section of animal life. British birds seem to be, on the whole, the most favoured subject; and I will therefore commence shortly “The Story of Our Birds.”

As an introduction to the Story and in order to connect it with what has gone before, I shall first briefly recapitulate the Story of Animal Life up to the point where the Birds branch off from the main stem of the Animal Tree. Next, I shall show how the Bird branch became divided, and I shall then proceed to deal with our British birds. “The Story of Our Birds” will be illustrated with reproductions from photographs; and I hope that I shall succeed in giving my readers—what I know to be very much needed—a brief and popular account which will enable them not only to distinguish the different kinds of birds when they see or hear them, but also to understand their modes of life and the meanings of their interesting habits. I hope that all readers who have friends—especially, perhaps, young friends—interested in birds, will recommend them to take *THE COUNTRY-SIDE*.

The old, old difficulty crops up in the following extract from a letter:—“Dear Sir,—Would it be possible for you to give in your valuable paper rules or suggestions for those who, like myself, may contem-

plate starting a nature study club, but who do not wish to let loose into the country busy hands and sharp eyes that may, should occasion offer, denude the countryside of its beauties? We propose this term to start a nature study club in connection with the City Secondary School here, and it is probable that the number of members will be large. Our excursions will be weekly, but the question arises—How can the members, who will be young—13 to 18—be prevented from ‘spoiling’ while out on their own rambles? This little difficulty has worried me not a little.”

The only suggestion which I can make is that the following facts should be impressed upon all the members:—Firstly, that when boys start making “collections” of their own the bulk of their specimens (fossils, minerals, and shells excepted, with perhaps seaweeds) are of little value on account of unskilful handling. A boy’s collection of butterflies, for instance, is usually a deplorable sight. Secondly, for want of methodical care afterwards, the specimens are almost always very shortlived. Thirdly, the enthusiasm of collecting dies away in nine out of ten boys by the time they leave school; and it is scarcely an exaggeration to say that of 100,000 specimens collected in boyhood there is scarcely one left in the collectors’ possession by the time they are thirty years old. On the widened horizon of manhood more striking objects of ambition claim attention, and in a very few years the man almost forgets, until he chances to be thrown into contact with a “collecting” boy, that he also “once” had a collection of butterflies, or birds’ eggs, or pressed plants.

Therefore the moral of my “firstly,” “secondly,” and “thirdly” sermon is that boys ought to be discouraged from making collections “of their own.” Such collections take up a great deal of time, they cost some money, they involve the destruction of a great deal of life and beauty, and they are, in the great majority of cases, practically useless and valueless at last. There is, I admit, a great spur to nature study of a sort in the making of a collection, because each boy naturally desires to have a better collection than his competitors. But I believe that by tactful management of a school field club this eager competition can be guided into useful channels.

The boys should be encouraged to collect, not for themselves, but for the school museum. This should be made as complete as possible in every branch of natural history; and with every specimen included in it should be recorded the name of the boy who procured it. And side by side with the collections of local specimens should be others not to be found in the district, which the boys had procured in their holidays. Thus the boys’ energies would always be turned in the direction of making new discoveries.

To bring home from a ramble a boxful of specimens of kinds which the museum

already possesses would be a blunder and a cause of ridicule from his fellows—which a boy dreads more than his master's worst displeasure; but to bring in something that was new, however insignificant in appearance, would be a triumph and a guarantee that so long as under the curator's care that specimen remained fit to be kept in the school museum, the boy's name would be recorded with it, where in future years perhaps his sons would read it.

* * *

Under this system the boys would be living up to a larger ideal. They are very quick at learning to distinguish different kinds of things, and in order to succeed in the field club they would make themselves familiar with the large school collections—a much better thing than more intimate acquaintance with small collections of their own. The establishment of the school collection as the object of common ambition would have this further advantage, because it would give the boys abundant material for popular and successful lectures at their field club meetings.

* * *

It is not always easy to find good nature objects on which boys can read papers to other boys; but, given the school collection with its treasures, and its deficiencies as a subject, there is no boy with knowledge in any department who could not talk at length, explaining to the others what kinds that were not yet in the collection might be found in the district, where to look for them, how to distinguish them from other kinds which were not wanted, and so on. All this would be good, solid instruction upon matters of direct interest to the young naturalists, and therefore much better than the papers on general subjects, usually compiled from books, which boys generally read to each other. And even the masters would find such lectures a more congenial and warming theme than they can often find. I can imagine that a single drawer of a butterfly cabinet with remarks on the rarities contained in it, accounts of the way in which they were secured, anecdotes of the boys who secured them, and so on, would keep an enthusiastic science master eloquent all the time.

* * *

In addition to these advantages, I hold that the strong discouragement of individual "collections," in a field club based on the understanding that all members worked for the school museum and the school museum alone, would have the effect of giving the boys *esprit de corps*, a sense of public spirit and an early appreciation of the solemn fact that life is not a thing to be wantonly destroyed. Boys are not really too young to understand that it is our duty to leave our country as beautiful as we have found it.

* * *

I know, of course, that there are many boys who have pronounced opinions on the pleasures of collecting for themselves. I dare say that there are many who, after reading so far, will say to the boys next to them that this chap has written a lot of tommy rot, or words to that effect. But this question—how to encourage nature study without adding to the already existing hordes of spoilers of the country—is the hardest problem which THE COUN-

TRY-SIDE and its friends have to tackle; and I would like to thrash the subject out with the boys.

* * *

So what I propose is this. Let the masters—or mistresses, for the girls probably have opinions too—of any schools where nature study is carried on, or where field clubs, etc., exist or are in contemplation, place copies of THE COUNTRY-SIDE containing these notes before their pupils, giving them one hour—it has taken me quite that time to put down all this—in which to write a letter, expressing their opinions on my views. Let them next select the best two letters, or more if they appear to have special merit, and send them to me. To the writers of the best letters among all those sent to me I will give copies of my book, "The Country Day by Day."

* * *

The number of copies I will give depends upon the number of letters received—and their merits. But do not let any boy or girl think that I shall be more pleased by a good letter in favour of my views than by a good letter opposing them. We want to get at the real solid truth of this matter, and what I hope to find in some of the letters is original ideas and sound reasons for or against private collections by young naturalists. I hope, too, that the masters and mistresses will make it quite plain that those who regard my notions as "tommy rot" are quite at liberty to give their reasons for it. All letters must reach me at the office in Tudor Street on or before this day month (April 2nd). Extra copies of the paper containing these notes can be obtained from the manager at the same address.

E. Kay Robinson.

The Wanderer's Death.

Born 'neath the curse of the comet;
Bred on the desert sand;
I have roamed since my birth in the wastes of
the earth,
And die in an alien land,
Where humming birds flash in the sunlight,
And the dazzling orchids nod,
And a Rider waits on a high, pale horse
To carry a soul to God.

The huge hump-shouldered mountains
Loom through the mists of death;
While the sob of the breeze as it tosses the
trees
Keeps time to my labouring breath.
Do I hear the throb of a distant sea,
The surge of a rising flood?
Ah, no! the throb is the throb of my heart,
The surge—the surge of my blood.

For my fever-fostered fancy
Dispels the haze of time;
And I live again with a racing brain
Past days in many a clime:
I can see in my dream the Arctic bear
That waits for the blowing seal:
Or I watch the shark of the tropic seas
That glimmers beneath the keel.

The howl of the hungry jackal
Wails o'er the moonlit plain:
And I hear the song and the rhythmic gong
Of an Indian marriage train.
Then the vision fades; but the Rider waits
In the moonlight by my side,
And gladly I clutch at his outstretched hand
And mount for my long last ride.

RAYMUND M. CLARK.

Was Darwin Wrong?

LETTERS FROM OUR READERS.

NATURAL selection and adaptation are by no means synonymous. The former postulates the appearance of accidental or chance varieties, for which no reason can be assigned. Adaptation, on the other hand, arises from the power of response, residing in the protoplasm, the nucleus, or generally, the vital organism, to its changing environment. Of such response, Professor Henslow tells us "there is abundance of experimental verification." While of natural selection, Wallace says, "It is, of course, admitted that direct proof of the action of natural selection is wanting." It is only fair to the memory of Charles Darwin to bear in mind that he frankly admitted that one of the greatest mistakes he had made was in not attaching sufficient weight to the direct action of food, climate, etc. (i.e., environment), independently of natural selection.—(Rev.) J. GURNHILL.

Your Wimbledon correspondent appears to form a somewhat hasty conclusion that there is not a biologist of any importance who is not an evolutionist. Unless he excludes Germans, and they are usually in the front rank, I should like to mention the names of Professors Virchow, Fleischmann, Zittel, Quatrefages, Von Wagner, Steinmann, Wilser, and Dr. Müller (editor of *Natur*), Professor Dana, all of whom have in recent years pronounced against the fulfilment of Darwin's hopes. Professor Tyndall, in "Ideals of Science and Faith," says: "Those who hold the doctrine of evolution are by no means ignorant of the uncertainty of their data."—T. L. LOVERIDGE, Cardiff.

What every biologist, geologist, and student of natural science really and unwaveringly accepts to-day, is the doctrine of evolution. This is all agreed upon as established, upon a sound and firm basis. All our observations of things organic tend to strengthen the evidence already accumulated upon this subject. What we are all not so fully agreed upon is Darwin's hypothesis of natural selection. Several of our leading authorities upon natural science still hesitate to pronounce definitely in favour of this great theory. Professor Huxley himself, whilst enthusiastically embracing evolution, so much so as to earn the title of "Darwin's Bulldog," never pronounced definitely his acceptance of natural selection. This was a source of disappointment to Darwin, who, like all men of genius, was of a very sensitive nature. Hypersensitiveness is invariably one of the penalties the man of genius ever has to pay. By Darwin's theory of natural selection, the biologist and the astronomer and physicist came into somewhat violent collision. The process of natural selection in aiding the production of innumerable plants and animals on our globe, compels the biologist to demand a much longer life-history for our planet than the physicists of the past have been willing to grant. The discovery of radium has probably modified this difference. Nevertheless, whilst we are still lacking an acceptable theory of variation, natural selection is undoubtedly a great biological conception, and as it accounts for so much of what we daily observe in the field of nature, we may justly claim that it is for the present the most reasonable and workable hypothesis.—LUKE ALDERSON SMITH, Stockton-on-Tees.

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"Do Birds Yawn?"—We have canaries, love birds, and a parrot which all yawn; but the parrot is the only one which seems to yawn most at night.—REGINALD R. OVENSTONE, Duntrune, near Dundee.

A Blind Gull.—A few weeks ago a gull was found near the beach, very thin and weak. My husband found it was quite blind. He has been feeding it since and it is now quite strong and well, and enjoys its bath, each day, and herrings, but cannot see.—Mrs. T. L. WARD, Old Colwyn, N. Wales.

The Work of the Ivy.—Ten years ago I cut through an ivy tree a foot from its root, expecting in a year or two to remove the growth from a high wall, but to-day, without any ground root, it is as fresh as it ever was.—THOMAS BELL, Fairlawn, Leamington.

Scentless Violets.—The scentless violet referred to by Mr. Nicholson in THE COUNTRY-SIDE for January 19th last, page 134, is probably what is known to botanists as *Viola permiscua*, Jord., a plant which is usually regarded by those who are competent to form an opinion on the point, as a hybrid between the sweet violet (*Viola odorata*, Linn.) and the hairy violet (*Viola hirta*, Linn.). It is intermediate in its characters between the two supposed parents, and, as might be expected from its hybrid origin, is somewhat variable in the colour of its flowers and in other respects, some specimens showing a preponderance of the *odorata* element, while others are nearer *hirta*, *V. odorata*, and *V. hirta* are no doubt closely allied species, but apart from the flowers of the one being fragrant and those of the other scentless, they are distinguished by several well marked and constant differences, especially in the shape of their leaves and in their respective modes of development. In the latter point the difference is very remarkable; *V. odorata* emits elongated scions or runners which rooting at the extremity produce new plants, much in the manner of strawberries; but in *V. hirta* the scions are either absent or very short, the result being a tufted habit of growth, not a creeping one as in the former species. *V. hirta* is much more hairy than *V. odorata*, and sometimes occurs with nearly pure white flowers, a very beautiful variety or form which is known as *Viola hirta*, L., and *lactiflora*, Reich.—DAVID FRY, Saltford, near Bristol.

Where Magpies Build.—With regard to the note of "A Reader," Darlington, on magpies preferring high trees wherein to build, his theory is not borne out by the practice of magpies in this vicinity. They are very common indeed round York; but the proportion of nests in tall hedges is considerably in excess of those built in trees, although, so far as suitable trees are concerned, there are any number, the country being very thickly wooded. The magpies seem to suit their individual tastes to the site for their nest.—SYDNEY H. SMITH, York.

The Northern Lights.—We, like others in the West, had a magnificent display of the northern lights on February 9th, long streamers and luminous clouds sweeping across the sky from a north-westerly direction. I am now more than ever convinced that the display is caused more by solar than electrical influence, after many experiments carried out with vacuum tubes and high pressure electricity in the past.—P. RAYNER MULLIS, Llandough, near Cardiff.

A Mouse-Catching Oyster.—Apropos of your interesting article in a recent issue of COUNTRY-SIDE on "Strange Captures," I send you

which had evidently stuck its beak in something which it found impossible to lift out of the water. The bird made some game efforts to rise, but ultimately "flapped" its way over the surface of the water to the foreshore, bearing in its mouth a fish of considerable size. By the time the gull had landed its prize, Captain Crombie was on the spot, and rescued the fish alive. It proved to be a fine "jack" or pike, measuring 14½ inches long, and weighing, when first taken up, 1 lb. 12 oz. This fish is very seldom met with in tidal waters.—J. C. LYNN, Gateshead-on-Tyne.



Photo.]

"G. W. Hobman.

A Living Mouse-Trap.

Three mice apparently caught by an oyster.

a remarkable photograph that may interest your readers. The oyster was left with others in a pantry where there were mice. In the morning three mice had been caught as you see them.—GEORGE W. HOBMAN, Stainlands, Ferrybridge. [The photograph is reproduced above.—ED.]

A Seagull's Capture.—The following is quoted from the *Newcastle Chronicle*:—The Aberdeen harbour-master, Captain Crombie, noticed a commotion among some gulls just by the foreshore round one of their number,

"Thrushes and Periwinkles."—On the 2nd inst., on the foreshore at Gogarth below the Great Orme's Head, Llandudno, I watched for a lengthy time through a pair of binoculars a song-thrush making repeated attempts to either impel the resenting periwinkle out of its retreat or to beat the stubborn shell to pieces, but on this occasion the bird was unsuccessful, dropping the mollusc and, apparently disgusted, the bird withdrew, leaving the shell entire and its occupant safely within. Whether it is of common occurrence I cannot say, but your correspondent's interesting observation is not an isolated one, for Yarell remarks upon the song-thrushes in the Hebrides indulging in the same practice, where, no doubt, it comes more frequently under the notice of the inhabitants.—"R. W. J.," Llandudno, N. Wales. [Mr. Arthur J. Shaw records a similar observation from Westcliff-on-Sea, where also the birds totally fail to break the shells of the periwinkles.—ED.]

Strange Insect Bite.—Last August while picking up fallen leaves in our garden I was stung by some kind of insect. I felt no bite, but my arm just above the wrist and under the edge of my sleeve began to tingle and itch, and when scratched the bite reddened and swelled as is usual. But the extraordinary part was that when I had my cold bath I was at once covered with a glowing rash, both in feel and colour, the bite on my arm being the starting point and swelling to the size of a shilling. Though so long back, the bite still comes up after the bath, though not to be seen now at any other time, and the rash appears though not quite as excessive. I saw no insect, so can give no description, but I wonder if you can throw any light on the subject in your paper.—M. DEAN, Stoke-on-Trent. [It may have been an earwig. Cases occasionally occur of bad results attributed to the bite of this insect.—ED.]

A Strange Fatality.—On January 26th I noticed a dead starling suspended from a telegraph wire by its head and left foot. Was it frozen there and, if not, how did it meet its death.—R. E. ASKEW, Liverpool.

Shakespeare Gardens.—There is a small one at Golders' Hill, N.W. Its object presumably is to illustrate practically the plants spoken of in W. Shakespeare's plays.—A. ELY.

"Brighton Invaded by Crabs."—During the past few days Brighton has been invaded by a strange species of crab; between the two piers the beach has been lined with thousands of them. The local fishermen, whose lives have been spent on the sea front, claim that the visitation is unique, and that the crabs (which are of a beautiful purple colour) are quite distinct from any species known locally. Some are as large as the palm of the hand,



Photo.] **Velvet Crabs.** [W. E. Carter. These have recently "invaded" Brighton in great numbers.

others smaller, and evidently are known as the velvet crab (*Portunus puber*) which swim on the surface of the sea by means of the last pair of legs, which are shown in the photograph, they being used as flattened paddles. Many people have been engaged in securing specimens, the sight attracting much attention.—W. E. CARTER, Worthing. [The velvet crab, also known as "lady crab" and "violet fiddler," often occurs locally in surprising numbers. It is very pugnacious, and closely allied to the swimming crab.—Ed.]

Gait of Thrushes.—I have long since made out that the song-thrush and the blackbird walk and run as well as hop, though the missel-thrush generally hops.—C. E. READE, Woodland, Manchester.

To me it has long been an unailing means of distinguishing a song-thrush from a missel-thrush, when not near enough to see the size, that in the case of the former the bird would certainly, if on the ground, be running, while the latter would certainly be hopping. The redwing g, again, hops, but less pronouncedly so.—(Miss) M. O. KITCHING, York.

Poisoned Sparrows.—Although no sparrow clubs exist in this locality, one day in spring I came across scores of dead sparrows within a radius of two hundred yards around one farm only. On enquiry I learned the birds had been poisoned by feeding upon the "dressed" corn, i.e., corn treated with poison for sowing, stored in the barn.—J. J. TOWNS, Holbeach, Lincs.

Old Cuckoo Lore.—The following is taken from a book on natural history in Shakespeare's time:—"Cuckoo: The cuckoo is a dishonest bird, and is very slow, and does not stay in a place; in winter it is said to lose its feathers and enters a hole in the earth or hollow trees; there in the summer it lays up that on which it lives in the winter. They have their own time of coming and are borne upon the wings of kites, because of their short and small flight, lest they be tired in the long

tracts of air and die. From their spittle grass-hoppers are produced. If you mark where your right foot doth stand at the first time that you do hear the cuckoo and then grab or take up the earth under the same—where-so-ever the same is sprinkled about there will be no fleas bred and I know it hath proved true."—F. T. BOLLAND, Chester.

Goat and Motor Car.—We have a goat and a kid here, which accompany us when we go for a walk on Sunday evening each week. They follow us like dogs, and enjoy their outing very much. The goat has a great aversion to motor cars, and when one comes along, if we do not catch her, she turns round and races along in front of it until some one succeeds in catching her. It is very amusing to watch her.—P. J. MOYLE, Craigavad.

The Early Cuckoo.—I beg to forward an account* from the *Kent Messenger* of a cuckoo heard on January 19th at Linton Park, at the same time feeling convinced that it is a true statement; for in years past I, myself, upon several occasions heard a cuckoo long before they have been reported elsewhere, and surely one cannot be mistaken in hearing them year after year? And the suggestion of one of your readers that a cuckoo clock might have been mistaken for a cuckoo would have no bearing in this case, when the bird was heard in a wood at least one mile distant from the nearest habitation. As Linton Park is only ten miles from the border of Sussex, I would suggest that the record refers to the same bird that was said to have been heard by several persons at Handcross.—F. WESTOVER, Maidstone.

* THE CUCKOO!

A correspondent writes: The cuckoo was distinctly heard on Saturday last by three different persons in Linton Park. Curiously enough, the field in which it was heard is known as Cuckoo Field, on account of the early appearance the bird always makes there. Mr. E. L. Shaw, of Linton, can vouch for the accuracy of the above statement.

Some Common British Fishes.

(Continued from page 223.)

He is one of the ogres of the sea. Buried in the mud he contrives, by the exercise of a most diabolical cunning, to get a fat living without in the least bothering.

The trick is done in this way. Certain of the spiny rays of the dorsal or back fin have become detached to form moveable rods, each surmounted by a little flag-like membrane. This is adroitly waved about so as to attract the attention of the curiously minded among the fish population, and to add to the general effect the body and lips are fringed with little ragged flaps of skin which wave about.

Among the passers-by, so to speak, some are sure to stop to inspect this strange thing, and coming sufficiently close are suddenly engulfed by the opening of an enormous trap, for such the huge mouth is.

The spawn of this fish is also remarkable, inasmuch as it forms great sheets as much as 100 square feet! The young anglers are, if possible, more remarkable than their parents in appearance, but this is another story.

The lump-fish is remarkable for the fact that its skeleton is not calcified; his bones give no more resistance to the knife than would a piece of cheese! But he is a model father; jealously guarding the eggs during their incubation, and later bearing the young about on his back, to which they cling by means of their suckers.

The Microscope.

The Late Sir Michael Foster.

ALTHOUGH this section is not intended for obituary purposes, a brief reference may be appropriately made to the recent decease of Sir Michael Foster, one of the most brilliant scientists that this country has ever produced. It was as an anatomist and physiologist that Sir Michael was most known, and in this sphere his work was in close association with the microscope and its teachings.

As a microscopist the deceased Professor, who was the first occupant of the chair of Physiology of the University of Cambridge, made some remarkable measurements of the minute structures of the human ear, as follows: "Length of the canalis cochlearis 35 mm.; length of the organ of corti 33.5 mm.; number of perforations for nerve fibres 4,000; number of inner hair-cells 3,500; number of inner rods of corti 5,600; number of outer rods of corti 3,850; number of outer hair cells (in four rows) 12,000; number of fibres of basilar membrane 24,000."

A Tiny Coral Colony.

All the year round the sea waves are good friends to the microscopist, for they provide him with contributions to his hobby in more ways than one. The liberal supply of marine growths, zoophytes and algae, that are washed ashore after stormy weather, are interesting not only in themselves but also by reason of the beautiful forms that are frequently to be found adhering to them.

The accompanying view is of one of these, and a careful search amongst a mass of drift will usually result in the discovery of a number of such items. This is a tiny coral colony and small though it is, its beauty will compare very favourably with its relatives of larger size.

The picture shows distinctly the separate tubes of the whole, each of which, during life, was the home of a polyp, and from the mouth of which it extended its flower-like head. The preservation and mounting of this class of object is an easy matter, and the expenditure of a little time and effort to this end will provide certainly not the least welcome addition to a collection of slides.

Carefully sort over the stuff and cut out the white specks that adhere, and after examination and selection lay them for a few hours in methylated spirit. As they possess depth they should be fixed in the centre of a cell-glass, vulcanite, or cardboard, each of which is easily



Photo.] **Polyzoa.** [Copyright.]

procured; the india-rubber rings that are used in mineral-water bottles when fastened to the glass slip make excellent cells.

The original association of these objects with salt water often means trouble, when the cell is covered with the usual thin glass circle, because of the dewy deposit that the inside of the latter attracts; to avoid this it is a good plan not to cover the cell permanently, but, instead, to protect it with the lid of an ordinary pill-box of appropriate size.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MARCH 2, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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A Water Garden Under Glass.

By S. LEONARD BASTIN.

THE simplicity of the cultivation in the glass house of aquatic plants is not appreciated by amateurs. A good many gardeners go in for a water garden on a small scale out of doors but very few carry out a similar scheme under glass; yet there are not many more fascinating forms of horticulture in which to engage.

Whilst, of course, for an indoors water garden, the best plan of all is to construct a brick tank which may be made to any size; for the amateur who has only very little room to spare there is hardly anything better for the purpose than one or more large wooden washing tubs. Equally suitable are the two portions which are the result of the cutting in half of a good sized barrel.

These tubs should be placed in fairly light positions, and supported in a substantial manner. Now fill the receptacles with water, rain or spring is to be preferred, although previous to doing this, it is an excellent plan to spread a layer of loamy soil over the bottom of the tub. It is now advisable to allow the tub to remain just as it is for a few weeks in order to allow the newness of the cask to pass away a little. At the end of this time small vegetable organisms will probably have put in an appearance on the sides of the cask and these will commence to carry on the aeration of the water.

Of course, first and foremost of the plants which may be cultivated in the water garden are the water lilies (Nymphaeas). There are so many splendid hardy species in cultivation now that some of the more tender varieties seem to be in danger of being overlooked.

This is a great pity as there are many very lovely greenhouse and stove species, of the simplest culture if they can only be accorded the warmth and protection of a glass house.

The best method of planting all kinds of water lilies is to place the roots just as received in old pieces of basket-work filled with soil of a rich loamy nature. These should be allowed to sink to the bottom of the tank. It may be mentioned that the spring is an excellent time for planting most of the varieties. There must be no overcrowding of the Nymphaeas in the water garden, and not more than two plants should be placed in a tub of an ordinary size.

As most of the tender Nymphaeas are really classed as stove species, the temperature of the house in which they are growing should be well maintained. It is not a bad plan to arrange the tubs so that they shall stand near to the source of the heat of the house in order that the water may be kept up to a good temperature. Care in this direction will largely assist in the cultivation of the more delicate exotic water lilies.

The general temperature of the house should not be allowed to fall much below 55 degrees in the winter time at any period

of the twenty-four hours. At this season the Nymphaeas will be naturally resting. It is needless to add that atmospheric moisture is of great help in the cultivation of all greenhouse aquatics.

The construction of a brick tank for the culture of water plants need not be a very difficult or expensive undertaking. Anyone who is fairly handy might venture upon the small amount of bricklaying involved, although in most cases it is best to call in a little professional assistance.

The tank should be raised well up above the floor of the greenhouse on four built-up pedestals. If the receptacle is of any size it will be necessary to have the sides made to the thickness of two bricks, and it is a good plan to add a proportion of cement to the composition of the mortar.

The depth of water to be allowed for should be about three feet, and certainly not less than two feet six inches.

To form the bottom of the tank there is perhaps nothing better than a stoutish piece of the material commonly known as "wire wove" matting; this could be procured from any builder's supply agent. If the area be very large it may be necessary to support the sheet of material with iron rods underneath.

The matting will be rendered impervious to water by plastering it over with cement of a consistency too thick to run through. On completion of the building operations, it is as well to line the entire interior of the tank with cement, thus ensuring that it shall be quite waterproof.

Regarding the best kinds of water lilies for greenhouse culture the great *Victoria regia* is naturally too much of a giant to be grown in a small space. There are several lovely, blue water lilies suitable for indoor cultivation, and one of the best of these is *N. coerulea*. This plant has perfectly formed blossoms of an exquisite blue colour.

An excellent pale yellow variety is *N. amazonum*, and this species will do well under very ordinary greenhouse treatment. *Nymphaea lotus devoniensis* displays blooms which are almost more gorgeous than those of any other, they being of a rich scarlet colour. A very nearly hardy blue flowering water lily is *N. stellata*. As the name implies, the plant, which comes from the east, has charming star-shaped blossoms. There are many other varieties which might be mentioned, and these comprise, altogether, well nigh every known shade of colour.

In a fairly large tub there should be room for a few pots round the side of the tub, and these can be partially or wholly submerged. There are a number of interesting plants which could be grown in such a position. If nothing more be attempted it will be found well worth while to give the situation to the old, but deservedly popular, white calla lilies.

The best method is to pot such plants as are to be grown in this fashion in some rich soil, and then stand the pots on other inverted pots resting on the bottom of the tub. Then only, can growers in England realise what splendid plants the callas will make if they are treated as they should be, like aquatics. Flowers and foliage will both be produced in the greatest profusion.

Another interesting species which may be cultivated in a partially or wholly submerged pot is *Cyperus papyrus*. This plant has a fine reed-like growth, and is believed by many people to be the biblical bulrush. Several exotic species allied to our pretty Arrow Head which grows so commonly in some rivers in England, are well worth the attention of the water gardener. These are mostly white flowered, and in all, the foliage is very pleasing in form.

Yet another useful plant in this direction, is *Thalia dealbata*, an evergreen species, a native of Carolina, producing in July pretty blue flowers. For those who can really give stove treatment to their water-garden, the water bean (*Nelumbium speciosa*) should not be left out of the list. This is a splendid plant from India, and one which bears beautiful pink blossoms.

Of course there are many valuable stove and greenhouse aquatics which it has not been possible to mention in the space of a short article. A water garden under glass, even though it is limited to the space available inside a wooden tub, is an endless source of interest.

When once the vegetation of the water garden is growing sufficiently to ensure the aeration of the water, the introduction of a few gold fish will add to the attractions of the garden. These look pretty diving in and out of the roots of the water plants, and will do no harm at all.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to G. W. Kelly, St. James's Street, Wetherby, Yorks.

Is it true that in the Arctic regions people, more than a mile apart, can converse comfortably?

In cold regions the air is denser, and the denser the atmosphere through which sound travels the further will be the distance to which it will reach; so that in the Arctic regions, where the country is flat, with little or no inequalities of the ground, it is possible to converse at great distances if there is also an absence of wind.

What is the cause of hail and rain storms?

When warm air heavily charged with moisture meets a layer of cold air or impinges against a snow-clad mountain range it becomes cooled; and as cool air cannot hold so much moisture in suspension as warmer air, some of it is precipitated as rain by the smaller particles of moisture collecting together, or condensing. Should this rain during its descent pass through a layer of atmosphere of which the temperature is below freezing point each raindrop becomes converted into a pellet of ice, or hail.

Is it true that Russian furs are getting scarcer?

Yes, it is reported that in a certain district of the Yenesei Government half a century ago hunters shot 28,000 sables per year, and now in the same district hardly one can be found. This is true in a lesser degree of many districts, and when one realises what this great slaughter of animals implies, the scarcity can be well understood.

Have cats ever been used largely in recent times to check the increase of any animals other than rats and mice?

Yes, in two cases. Cats were introduced into Sable Island, Nova Scotia, about 1880, when they rapidly exterminated the rabbits which had held the upper hand for half a century. More recently the West Australian Government turned loose a large number of domestic cats in the South Eastern districts of the colony to check the invasion of rabbits from South Australia and so far the experiment has proved successful.

Which naturalist's experiment has probably proved most disastrous to a community?

A few years ago a naturalist introduced the gipsy moth into Massachusetts for private experiments. He accidentally left outside his window a few eggs which the wind carried away and the sun hatched. These have multiplied to such an extent and the devastation wrought is so great that the Government has taken up the matter and a regular crusade, costing thousands of dollars a year, is organised to exterminate the pests.

Why have parrots crooked and hard bills, and why can they move their upper as well as lower bill?

The parrot uses his crooked bill as a hand, especially in climbing, and its shape and hardness are necessary to break the kernels and nuts on which it feeds. Owing to the curve of the upper bill the parrot would not be able to get its food into its mouth were the lower bill not made to move upwards.

Why does a peg-top hum less in spinning than a humming-top?

The only departures from smoothness in the surfaces of a pegtop are in horizontal lines in the same plane as that in which each portion of its surface rotates, and there are no openings from the surface into a hollow interior as in the case of humming-tops. There the sides of such openings catch the air and set up vibration therein, and in some humming-tops the openings conduct the air to reeds which develop the humming into a musical note.

Why do seashells give a murmuring noise when they are held close to the ear?

A shell owing to its shape and its delicately constructed walls, is an excellent magnifier of sound—almost as good as the microphone. Its labyrinthine shape causes it also to develop the refraction of sounds exceedingly. There is always a considerable amount of noise in a room which is not heard until increased in this way, but possibly the principal cause of the rushing sound is due to the heat of the body which causes a perpetual current of air from and to the body, and this rushing past the mouth of the shell the noise is magnified.

Why are bubbles more easily formed with soapy water than with clear liquid?

A bubble consists of a thin spherical film. If formed from clear liquid this film is necessarily extremely thin. Hence when air enters the growing bubble it tends to burst it. A soap bubble, however, is made of a film of much denser and more cohesive liquid. Hence the film is thicker and the chance of bursting much less.

Is there any explanation why some kinds of cut flowers grow in water, and some do not?

Why won't some cats eat mice?

Why are children so fond of eating sugar and other sweet stuffs?

Why is it that soldiers in battle frequently lose their hearing?

Is it true that cats will not eat robins?

Why are pies, into which an inverted cup was placed before baking, more juicy than those that have no cup?

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

IN the Antelope House may now be seen a specimen of a rare ruminant, now exhibited for the first time, the long-tailed goral (*Urotragus caudatus*) of Corea. This, like the serow, which, not so very long ago, also made its first appearance at the Zoo, is one of the curious mountain-animals which stand in an intermediate position between goats and antelopes.

The present species is about as big as a good stout goat, with short, curved horns, and a thick coat of grizzly hair; its tail is its chief peculiarity, not being the short bob-tail of

the goat, but quite long, reaching nearly to the hocks, and bushy, with a good covering of hair.

Secluded for the present in the old Lecture Room is a recently arrived specimen of the red variety of the well-known ruffed lemur (*Lemur varius*). This large and fine lemur is normally black and white in large patches, reminding one of some tame dogs; and it is very curious that the red form, in which both black



[Photo.]

[W. S. Berridge, F.Z.S.]

Himalayan Goat recently added to the London Zoo.

and white are mainly replaced by foxy-red, should be of the same species, such extreme variation of colour being very rare.

A very young chimpanzee—the youngest, in fact, which seems to have reached the gardens—is now in the private rooms in the basement of the Apes' House. The little thing is barely the size of a hare, but it is quite healthy, and has fortunately been well received by the two young orangs, with which it has been "chummed," although they are over twice its size. These orangs themselves are interesting, as exemplifying two different races of the species. The more recently arrived one, from Borneo, has the skin mostly dark, and not so well clad with hair as the older favourite, "Delia," from Sumatra, who is fairer and much more hirsute, with a paler coat.

In the ducks' paddocks there are three remarkable hybrids, bred between the mallard and pochard. There are two drakes and one duck, all somewhat intermediate in form between the two species. In plumage, however, the duck is distinctly of a pochard type, being of a uniform brown, paler below, and not mottled like the mallard's female; while the drakes are so like the mallard that they might be taken for dull-coloured specimens of that bird, though they lack the white collar and the curls in the tail. All have a white wing-bar, not the blue one of the mallard; but this white bar is a characteristic of the red-crested pochard, not the common one, and this female is very like the female red-crested pochard.

Two of the penguins in the seal-pond have brought off a chick, quite surreptitiously, for they were not known to be breeding till the little one was well-grown. They nested in one of the artificial burrows in the enclosure, not on the rockery, and are evidently carrying out the family tradition in breeding at this season, for in its natural home in the islands off the Cape of Good Hope this penguin may be found breeding all the year round.

The illustration of the male tahr well depicts this fine Himalayan goat in the full luxuriance of his winter pelage.

From a Gamekeeper's Notebook.

The Valnglorious Cock Pheasants—Courtship Rivalry—The Fox's Family—Cunning of the Vixen.

By "GAMEKEEPER."

The Valn-glorious Cock pheasants.

THOSE signs are at hand which tell the gamekeeper that he may expect pheasants' eggs at no distant date. With joyous anticipation, that fades not each succeeding year, he admires, dozens of times each day, the metallic green rosettes and vermilion checks of the vain-glorious cock birds.

These rosettes, perhaps more like feathery horns projecting about half an inch on both sides of the bird's head, are the surest signs that the nesting season is near. When the keeper detects a cock pheasant who possesses not these regulation tokens of courting, he knows that the bird is of the bachelor persuasion—a mere loafer in the woods. And to the keeper's ears a sound no less enchanting than the courting dress to his eyes is the deliberate crow of the cock bird, jubilant and defiant. For each defiant crow, each drumming of his wings, is a challenge to all aspirants to approach at their peril the harem of hens who have breathed allegiance to this vain, pompous dandy of the woods.

Courtship Rivalry.

Cock pheasants are arch polygamists, taking unto themselves a dozen wives, if they can win them. Fierce duels are fought between the rivals. Though two cocks attack each other with the utmost fury, there seems to be some understanding between them. As if time had been called by seconds, I have seen two combatants stop simultaneously in the middle of the toughest battle, and peck about as if neither had an enemy in the world. Then, after a few moments' rest, and revived by the refreshments obtainable locally, into the duel again they rush with an ardour fiercer than ever. Thus they fight many rounds. Sometimes it all ends where they began, and each cock leads away those hens who will follow him; but more often one proves himself a decided winner, and annexes the majority of the hens, while the bedraggled, crestfallen loser slinks away, taking with him only the discarded sweethearts of his foe.

And so, when there is a too abundant supply of male birds emigration goes on, with the consequent loss of hens to the home woods. Though this is the theory accepted generally, some keepers believe that the more cock pheasants a wood holds the more hens will immigrate. But these keepers believe, also, that the ladies run after the gentlemen—in all walks of life.

The Fox's Family.

For some time past the keeper has been anxious and inquisitive concerning the spot chosen by vixen foxes for nursery purposes. I believe that the majority of keepers are just as excited when they discover a litter of fox cubs as if informed, on returning from a long ramble, that twins have appeared in their own family circle. Fox cubs are born about March 25th; in fact, nearly all foxes claim, as their birthday, one day in the month on either side of that date.

The keeper detects at a glance the doorway to a fox's underground lair, for besides the unusual size of the entrance hole, the excavated soil is piled always in a heap just outside, unlike the long furrow of soil rabbits draw out. Occasionally a litter of cubs is born above ground; I remember the discovery of no fewer than thirteen baby foxes beneath a thick holly-bush.

Though a vixen is most persevering in clinging to the earth of her choice, and requires often a great deal of persuasion to induce her to seek quarters, considered, perhaps, by man more suitable, should man or dog

near her lair, after the birth of her cubs, she will shift immediately. And so ready is the crafty mother fox to take a hint from the slightest warning that she does not wait always till nightfall. With commendable forethought a vixen has in readiness a second lodging for her family, in case the first proves untenable. When he who would rob her of her cubs stumbles on to the nursery earth, he leaves his coat or handkerchief on guard while he goes for spade and grub-axe. The presence of the coat will restrain the mother from an attempt at rescue.

Cunning of the Vixen.

There is one main entrance and exit to the breeding chamber, but the cunning, resourceful mother sees to the formation of other passages for use only in case of emergency, and for the cubs to play in securely when they are old enough. The living-room of the family is enlarged to between two and three feet in width, and, that it may be warm and dry, is on a slightly higher level than the passages. This interesting apartment is known to keepers as the "oven," I suppose because it somewhat resembles the old-fashioned bread ovens.

Nature arranged things well when she ordained that there should be an abundance of food easily obtainable when fox cubs are about six weeks old. Then there are plenty of young rabbits and a variety of other game to be had almost for a fox's asking. The cubs now, if fate has been kind to them, hold high revels outside the front door of their home. And there is no prettier sight in all the quiet freshness of our spring woods than to watch cubs, as yet innocent, at play.

Week's Wild Life in Pictures.

(See page 231.)

EVERY year a few bitterns (1), once interesting common objects of our fenlands, come to England, and every year they are shot, in order to be posed like the bird in the picture inside a glass case. If collectors would but hold their hands, the bittern would probably become a British breeding bird again.

2 and 5. These are two of the few handsome moths of the early year. Their colouring is not unlike that of the tortoiseshell butterfly, for which, although they are not so large, they may be mistaken, as they fly swiftly and straightly in the first sunny days of March. They are neither common nor very rare. The orange underwing (5) is larger and handsomer than the light orange underwing (2), with reddish-brown upper wings, while those of the other are greyish brown.

3. It is pleasant to see birds' nests and early spring flowers coming into our week's wild life again; and the robin is one of our earliest nest-builders, usually in a niche on some sheltered bank, but often in an old kettle or tin can or any sort of receptacle which is cosy and waterproof.

4. The twin bladder wrack is abundant on all our coasts, especially after the storms which are common now. It has not always the air-bladders from which it gets its name; but when these occur, as in the picture, they are almost always in pairs; hence "twin" bladder wrack. This seaweed is largely used as manure and fodder for cattle.

6. The black thorn, or sloe, seems to mock the departed winter by sheeting itself with a hoar-frost of tiny blossoms on every twig. Not one blossom in a hundred, however, produces one of the small, sour, purple fruits over which children pucker up their mouths in early autumn.

7. The first mild days of the beginning of spring tempt out the toads which find their way—if they do not tumble into holes from which they cannot get out—to the nearest still water, where they twine necklaces of jelly eggs round the weeds. Ordinarily toads seem dull coloured with no particular markings; but during the breeding season and in the water most of them are rather conspicuously yellowish with a number of small dark spots.

8. Like the robin, the thrush is one of our earliest nesting birds, as it is also one of the earliest to sing. Unlike the robins, however, its nest is usually very easy to find, being often stuck up in full view in some leafless bush or against the bare trunk of a tree. Its bright blue eggs with blackish spots are always lovely, clustered inside the nest's neatly-plastered cup.

9. Brightest of all the very early flowers of spring the coltsfoot gleams with a purer, paler gold than dandelion or buttercup. The scaled stalks which bear the flowers are thrust up out of the bare ground, generally dry and gravelly ground; and the plant's large flat leaves do not appear until the summer.

A Correction.—The insect of which two pictures, Nos. 5 and 6, were given in the "Week's Wild Life" of February 10th, was wrongly identified by the artist. It is a winter gnat, and belongs to the genus *Trichocera*, probably the species *regulationis*, one of the *Limnobiidae*. Although it is called the "winter gnat," it is not properly a gnat, but rather a slender daddy-long-legs. [For this correction I am indebted to the Rev. W. E. Wingate, Bishop Auckland, and Mr. J. R. Malloch, Bonhill, Dumbartonshire.—Ed.]

A Puzzle for our Readers.

A Cat that can Earn His Living.

LAST week a gay old neighbour paid me a visit. Though he is eighty-four or eighty-five, he is as active as a boy and as lively as a bee. I should introduce him by saying that there is hardly a town in England but he knows, as he spent twenty years of his life with variety shows as the professional conjurer travelling up and down through the country with his troupe. He is still surprisingly adept at feats of sleight of hand.

Noticing a great cat blinking at the fire he said, "A very lazy brute. Why not make him work?"

"He does work," I replied, "and does his work very well. No rat or mouse dare show its nose about this place."

"But why not make him draw the water?"

"A cat draw water! Impossible!" I exclaimed.

"I'll show you how he could do it," he replied. In ten minutes that cat was carrying a small camp-kettle (*vulgo* tin-can) half full of water all round the room. Ever since he will do the same any time I want him. Now I ask your readers how is it done? It is too simple to be explained.—(Rev.) JOSEPH MEEHAN, Creevelea. [I confess to being unable to guess how this is done. Can any reader explain it?—Ed.]

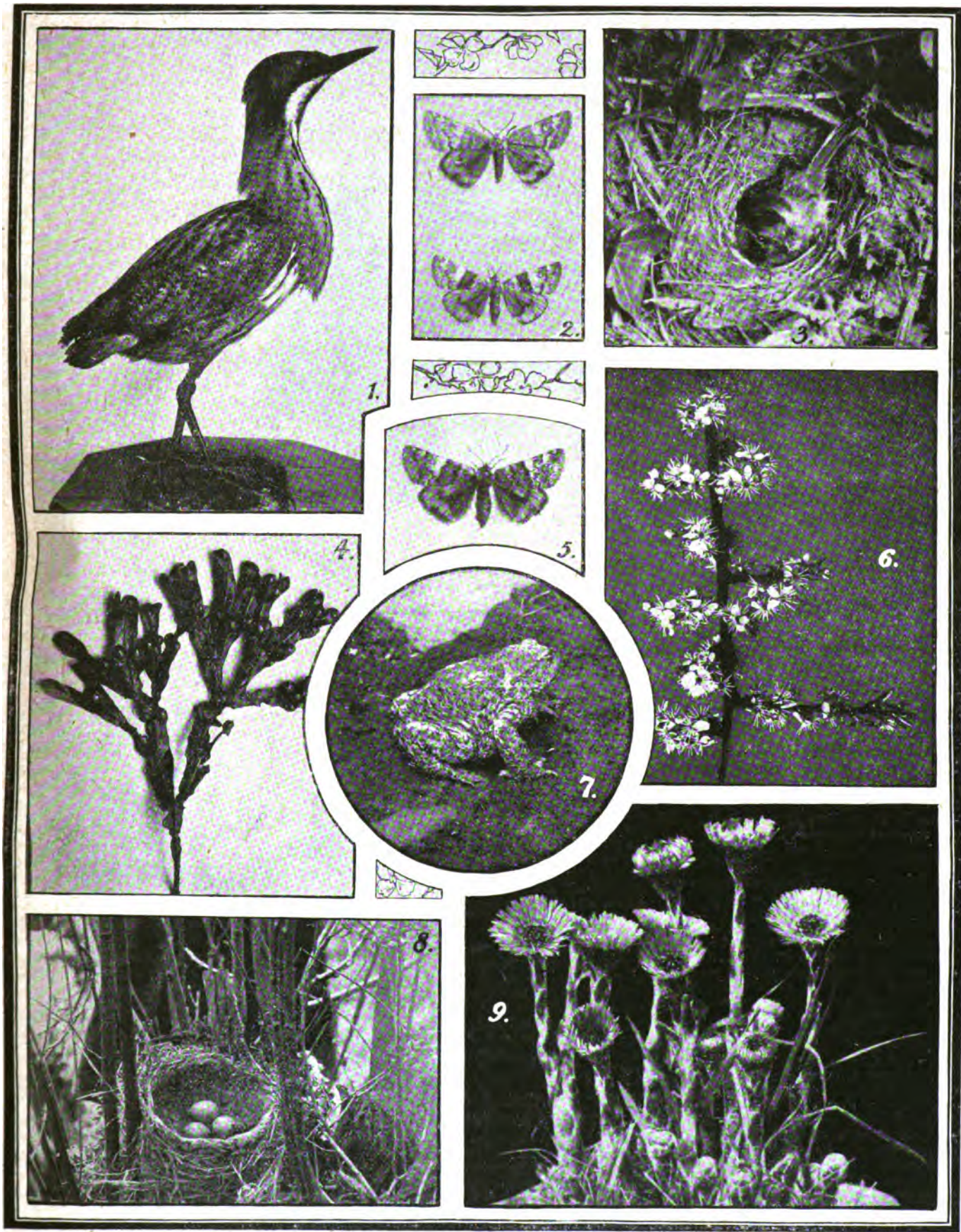
OUR
Sale & Exchange

3 WORDS A PENNY.

See the Back Cover.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 230.)



1. Stuffed Specimen of a British Bittern, *Botaurus stellaris*, shot near York (L. H. Smith). 2. Light Orange Underwing Moth, *Brephos notha*, Male and Female, and, 5. Orange Underwing Moth, *B. parthenias*, Female (E. P. Peck). 3. Robin, *Erithacus rubecula*, on Nest (E. L. King). 4. Twin Bladder Wrack, *Fucus vesiculosus* (J. H. Crabtree). 6. Blackthorn, or Sloe, *Prunus communis*, in Bloom (J. H. Crabtree). 7. Toad, *Bufo vulgaris* (Copyright). 8. Nest of Song Thrush, *Turdus musicus* (D. O. Jenkins). 9. Coltsfoot, *Tussilago farfara*, in Bloom (G. Parkin).

Amateur Photography.

NOTES FOR MARCH.

Difficulties of the Month—The use of Screens—Cloud Forms—Overhauling Apparatus.

Difficulties of the Month.

THE distinguishing feature of March is the generally harsh and crude colouring of the country. The fact that as a rule the prevailing winds are easterly, causes the air to be remarkably devoid of moisture, and thus the half-tones are notably absent.

It is common knowledge that on a typical March day, with a keen wind and clouds of dust, the air is clear, and all objects stand out with intense sharpness. This state of things is faithfully reflected by the photographic plate unless special precautions are taken in the shape of extra exposure and careful development of the landscape.

In no month of the year is it more necessary to use an actinometer. The early spring light is most deceptive, and it needs considerable care to grasp the fact that despite the glare and the clear air, that subtle thing called actinism is notably absent. All that is needed to confirm this statement is for a rapid snapshot to be taken on a day when there is a keen east wind and cloudless sky. It is almost certain that the plate will come up slowly, and will be distinctly deficient in softness and half tone. In March it is necessary to give a most generous exposure in spite of blazing sunlight and cloudless sky.

The Use of Screens.

The fact of the colouring and conditions tending to harshness renders it needful to use a screen with the greatest care and judgment. The mission of a screen is to accentuate the contrast, and in this particular month there are notably few blue rays to cut off, the result being that nine out of ten screen exposures end in over-correction. Most photographers will have learnt to recognise the signs of this defect. The grass of a landscape study is a harsh black and white tone, and almost every blade sticks up like a small tooth comb carved out of white horn. There is also a complete want of softness all over the picture.

That isochromatic screens are valuable at certain times is beyond a doubt, but at the same time they should not be used indiscriminately at all times and seasons. If one is used in March, it should be only of low intensity—three times for instance. When screens are valuable is at the end of the month, when great electrical clouds are about.

Cloud Forms.

But when clouds are absent, or only present in thin wisps of cirrus, then a screen should not be used, as it will do no good to the picture, but a great deal of harm. March clouds have a character of their own, and are most interesting as a study. In this first of the spring months there is generally a good deal of electricity abroad, and as every observer of Nature knows, electricity causes the most wonderful banks of cloud to form.

At times these are of such a nature that they are best photographed on a plate by themselves, as if done in connection with a landscape the latter is overshadowed by the giant masses. These negatives can be used as studies pure and simple, or printed into a picture to enhance a certain planned effect. It sounds ridiculous, but as a matter of fact a sky in nature often goes very badly with the landscape, and critics are apt to make nasty remarks on an effect which was simply photographed direct by the worker.

If the studies are taken for printing in, it is always well to leave a strip of landscape at the bottom of the plate as a guide for use when printing the clouds into another picture. It is also well to make a little note on each side denoting the points of the compass, and the direction in which the light strikes the clouds.

Unless this is done the picture will present some novel features.

Most attractive studies in March cloud effects are the swiftly passing snow storms so common at this time of the year. The singular white crape effect of the falling snow is most pictorial if it can be got on a plate. So also are the great rolling snow-clouds with their brightly lighted folds and curious contrasts of grey and silver.

The great objection to getting these pictures lies in the fact that a great deal of physical discomfort has to be faced, and very few have the health or the enthusiasm to undergo these disagreeables.

Connected with electrical conditions of the atmosphere, the curious collection of magnetic cirrus called "Noah's Ark in the Sky," is often to be seen in March and April. Those who live in flat parts of the country must often have noticed a band of small flaked white clouds assemble in infinite profusion in a band across the sky most often from east to west. To the imagination this forms the outline of a boat's keel, hence its name.

The common report goes in Lincolnshire that when the band assumes a concave form the "Ark" is right side up and fair weather will ensue; on the other hand, if the band is convex, then the Ark is upside down, and bad weather may be expected. Apart from this, the massing of the tiny cloud flakes is sufficiently curious to be well worth wasting a plate on portions of the appearance.

Overhauling Apparatus.

The fact that Easter falls remarkably early this year is the reason for suggesting that in the cold days in the beginning of the month, the photographic apparatus should be carefully overhauled. When cameras are put away for a time they have a mysterious way of going wrong, and if not overhauled before the warm weather, the work may have a decided set back at the most tiresome time. Rubber teats, rubber balls, and especially the wooden slides of double dark backs, nearly always get affected by damp, and refuse to move easily.

Powdered talc, or French chalk, is the general lubricant for such cases, but some prefer to rub a rather soft lead pencil up and down the slide grooves, taking care to shake the dark slide well after the process so that no portions of the black lead may remain and get on the surface of the sensitive plate. The dividing cards also have a way of getting lost. A dozen stiff black cards can be had for a few pence, and these are always useful to have at hand.

The backing cards of the Kodoid films are also most useful for this purpose, and when a packet is used the backing cards should be carefully preserved.

The plates for March work should be of the rapid isochromatic type, as the light is far from being as good as it looks. Owing also to the presence of leafless trees it will be best to have them backed to avoid any chance of halation.

F. J. E.

Our Photo. Competition. TWELVE GUINEAS IN PRIZES.

Photographs intended for the March competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Astronomy.

PHENOMENA DURING MARCH.

By Norman Lattey.

DAWN begins on March 1st at 4.56 a.m., the sun rises at 6.49 a.m., sets at 5.37 p.m., and twilight ends at 7.30 p.m. The mornings this month increase 1 h. 10 m. and the evenings 53 m. On the 21st the spring equinox occurs, when day and night are equal all over the world. Thereafter the days in the northern hemisphere begin to lengthen and those in the southern to shorten. At the beginning of the month the moon will be on the wane, "last quarter" occurring at 8.41 a.m. on the 7th. She will consequently rise later and later to finally re-appear as "new" on the 14th, and become "full" on the 29th at 7.44 p.m. Just before sunrise on the 10th the pretty spectacle of the moon being very close to the planet Venus may be witnessed by early risers if the morning be clear. One satellite will also be found not far from Jupiter on the evening of the 21st.

The solar disc has lately been furnishing evidence of violent disturbances beneath its surface. Towards the middle of February several fine groups of sunspots made their appearance. They were evidently of vast proportions, being visible to the naked eye and easily distinguishable by means of a binocular (the eye lenses of which were, of course, densely smoked). The largest spot at one time covered an area of 700 million square miles! As is so often the case during these periods of unusual solar activity, a magnificent aurora was witnessed throughout the country on the evening of February 9th, and was accompanied by the most intense "magnetic storm" recorded since the memorable one of October 31st, 1903.

Of the planets only Mercury and Jupiter possess any interest just now. The former, at all times an elusive object, may be glimpsed glittering over the western horizon an hour to an hour and a half after sunset during the earlier part of the month. On the 1st it will be at its farthest eastern distance from the sun, and therefore most favourably placed for observation. After that date Mercury will commence its westward swing back into the glare, and will be lost for a few days in the rays of the sun, until it re-appears above the eastern horizon in a couple of weeks as a "morning star." This planet—the nearest known to the sun—undergoes phases like Venus and our moon, but, owing to the difficulties of observation, little else can be gleaned about it. Jupiter continues to dominate the evening sky, rising half an hour earlier by the end of each week. He can be easily identified as the brightest star-like object in the southwest heavens, half way up towards the zenith. Almost the smallest telescope will show his four principal moons.

A weirdly strange glow may often be seen at dusk in the west at this season of the year. This is the zodiacal light, so called owing to its situation in the zodiac. It assumes the shape of a vast cone of pearly luminosity tapering upward from the horizon, almost to the Pleiades. The origin and nature of this celestial wraith is a mystery. That it is in some way intimately connected with the sun seems certain, since it extends on opposite sides of that luminary for an immense distance. According to one theory it is an exceedingly tenuous extension of the corona (only seen at times of total eclipse); another hypothesis supposes a faintly illuminated cloud of meteoric dust circulating round the sun; while yet a third suggests an electrical effect analogous to terrestrial auroras. The zodiacal light is occasionally so effulgent as to be mistaken for lingering twilight. The opposite extension referred to may be noticed in the east in autumn, heralding the approach of sunrise, for which reason the Persians call it the "False Dawn."

Live Stock for Profit and Pleasure.

POULTRY.

Fertile Eggs.

ALMOST the chief annoyance which yearly visits the poultry breeder is that of unfertile eggs, especially during the winter months when they are so urgently required in the heavy breeds which must be hatched early in the year in order that they may maintain size and mature properly.

First we have to consider the ages of the birds forming the breeding pen, a point so often overlooked, for we must have age on one side—either a vigorous cockerel (that is hatched last year) with adult or two year old hens, or last year's pullets mated with a good cock of two or three years' growth.

The number of hens given the male bird during the present month should not exceed four, but after March the number may be increased to six. The strength of the germ will be much increased if this plan is adopted.

Exercise in the breeding pen is another excellent and easy method of increasing fertility, for if fowls are given plenty of exercise by scratching amongst loose litter for grain they cannot fail to be vigorous, and here let me state that poultry really have no other way of warming their feet and bodies than by scratching. Good housing and comfortable night shelters with a proper shutter to keep out the under draft will all assist the parent stock to perform their natural functions, i.e., the reproduction of their species.

Lastly, but not least, it is necessary for the fowls which produce the eggs from which chickens are to be successfully hatched to be suitably fed with nourishing food, containing the necessary elements.

We have to consider not only the embryo, its growth and subsequent *début* into the world, but that the chicken is formed almost entirely from the white of an egg and the yolk is the pabulum on which it has to exist for fully twenty-four hours after it has emerged from its shell, at least by a wise provision of Nature no food is required for that period of its existence, and it is far better to keep the young fledglings without.

The parent stock requires in place of insect foods a good flesh forming diet with a small percentage of starchy matter which cannot form one atom of muscular tissue on which strength and vigour depend, whilst starchy foods produce an excess of earthy salts, and disease follows. The great bulk of stock poultry should be fed on soft food with a good allowance of animal matter, such as chopped meat, and here I can safely advise Spratt's Patent Poultry Meal, with an addition of this popular firm's Crissel, which is a capital preparation of cooked meat.

Both of these should be made by pouring boiling water over it and allowing it to stand for an hour, if possible, when it may be dried off to a crumbly consistency with middlings or sharps, the dressings from wheaten flour, so well suited to poultry. For grain it is well to ring the changes on

oats, wheat and maize, whilst a few peas occasionally is a very good pulse food.

Do not omit to keep the grit box well filled with sharp flint grit, also a second box in which a good supply of calcined oyster shell is kept, for even with fertile eggs, if the shells are too thin to stand the three weeks' incubation there will be failure, and I have known many vexatious results arise from this omission. If my readers will follow this advice they can confidently expect fertile eggs and healthy vigorous chickens.

Shelter for Chickens.

I do not advise coddling newly hatched chickens, but am decidedly in favour of giving the young birds good shelter during the cold weather. Most of our successful poultry breeders make a point of giving chickens warm quarters and dry runs.

On most establishments comfortable sheds and outbuildings can be utilized to advantage, the ground should be well drained and covered with peat moss litter, dried fern, or better still, dry stable manure, which if fairly long will keep sweet a good time.

A chill in cold weather will prove disastrous to a hatch of chickens, but this is impossible if proper shelter be afforded the young birds, while if small seeds such as "Chikko" be scattered in the looser straw plenty of exercise is given, and this is very essential for their health and development.

Great care must be taken to prevent chickens running on grass runs in extreme frosty weather; in fact, if sheds cannot be given them small covered runs can be easily improvised, and the ground can be kept dry by sifted road scrapings.

Whether reared by broody hens or artificial brooders, cleanliness must be scrupulously observed, for chickens cannot possibly thrive in a dirty state, and both coops and brooders soon get soiled. All appliances, of course, should be lime-washed before being used. An excellent floor for the coops of chickens is a square piece of tarred felt, which will prevent damp, give warmth, and an immunity from lice, which so quickly breed when chickens are about.

DOGS.

NOTES AND NEWS OF THE WEEK.

THE DUKE OF DEVONSHIRE has presented the forthcoming Eastbourne Dog Show with a fifteen-guinea challenge cup for the best dog in the show.

It was news to read in a contemporary the other day that the Kennel Club have a rule which prohibits the registration of dogs under names of notable people. Mr. Robert Milsted complains that although he had received the consent of Miss Ellen Terry and Mr. Fred Terry, these names were refused him by the Kennel Club, and that now, knowing the K.C. rule, he intends to use as nomenclature the names of some of his own favourite parts. To our mind the Kennel Club are very wise in making such a prohibition, as the various advertisements necessary in the conduct of a kennel make the use of notable names quite impossible.

Mr. Redmond, one of the committee of the Kennel Club, speaking at the annual dinner of the "Allied South of England Airedale and London Scottish Terrier Clubs," held at the Savoy Hotel, said that while the Airedale could boast of good legs and feet—the foundation of all good terriers—a craze for heads had ruined the mastiff, and in the St. Bernard had brought in a lot of cripples. If this is true, the breeder had better take warning and revise their points in favour of legs and stamina.

Much interest is aroused in Ireland over the foundation of a challenge cup for Irish wolfhounds. The cup is to be named the "Graham Cup" in commemoration of Capt. Graham, whose love and work in the interests of the hound of chivalry, poetry, and romance cannot be too highly appreciated. The Graham Cup should awaken the dormant activity of dog lovers in Ireland, and act as an incentive to Irish breeders not to let the national dog die out. Lady Nesta Fitzgerald heads the subscription list.

It is stated in *Our Dogs* that toy bull terriers of excellent quality are to be found in Glasgow, where these little dogs have been held in favour and bred successfully for several years past, but owing to the decree of fashion against them, Scottish fanciers have not sent them South for exhibition. The correspondent describes the Glasgow dogs as "beautiful little chaps, with flat wedge-shaped heads, short backs, strong ribs, dogs that can kill a rodent in double quick time."

It is not good news to hear that the French bulldog is being fast Anglicised, for no other interpretation can be drawn from the adoption by the committee of the reigning club of the new weight, which allows dogs to be over 28 lbs. One of the beauties of the bat-eared bull was its weight, which in France varies between 18 and 24 lbs., and the smaller the weight the more highly prized, of course. The excuse for removing the weight clause is to allow the inclusion of puppy classes at shows, that these latter, sad to say—though of great interest to a spectator—increased the death roll of a show, by conducing to distemper, for where puppies congregate disease follows.

Those great canine providers, Messrs. Spratt, held their annual dinner recently at Crosby Hall, and not the least interesting speech of the evening was that of Mr. Wingrove, who related how, in the seventies, the staff of the same business consisted of five, including himself, whereas, to-day, they numbered over a hundred. The growth of the dog business in thirty years is quite phenomenal.

The Ladies' Kennel Association has not after all availed themselves of the invitation to send a representative to the K. C. Council of Delegates, for, at their annual meeting, held at Cruft's Show, on a motion by Mrs. Preston Whyte, it was decided not to do so.

Messrs. Cassell are issuing a companion work to Miss Simpson's popular book on the cat. This time it is "The New Book of the Dog," and Mr. Robert Leighton is the editor. Among many new features, a very useful one is that entitled "The Dog and the Law," by Mr. W. S. Glynn. This work will be issued in monthly parts.

DO YOU WANT

To Buy or Sell a Dog, a Cat, Poultry,
or Cage Birds?

If so, see our

SALE & EXCHANGE

on the back cover

CATS.

OUR Dumb Friends' League has lately been endeavouring to deal with the question of the best method of clearing our London streets and squares of poor lost and stray cats.

Investigation has proved that the greatest need exists for some temporary shelter in each Metropolitan borough. The numerous homes and institutions, which exist for stray cats have done, and are doing splendid work, but in the majority of cases these homes are situated on the outskirts of London, and consequently the distance is a serious drawback to those who would otherwise be willing to rescue poor stray cats from the streets.

The main idea of this scheme is to establish throughout the Metropolis "receiving shelters," where any cat, whether a stray or a not wanted animal, can be taken. Each shelter is to be in charge of a responsible caretaker, and will be provided with one or more lethal boxes in which diseased or injured cats will be at once put mercifully to death.

One of these shelters, in connection with "Our Dumb Friends' League," will very shortly be opened at 905, Fulham Road. This is a splendid centre for carrying out this good and humane work.

Several well-known ladies in the cat fancy are interesting themselves in the movement to establish these much-needed receiving shelters in various centres of the Metropolis. Mr. A. J. Coke, secretary of Our Dumb Friends' League, 118, Victoria Street, will be pleased to give any further information, and would gladly welcome any donations from the readers of THE COUNTRY-SIDE who may sympathise with this new move in the right direction for conferring benefits alike on man and beast. The fund which was started in the cat fancy for assisting Mr. T. B. Mason, the judge, to pay the costs of a recent action brought against him by a cat exhibitor, reached the total of £250, and this sum was presented to him by Lady Decies at a large meeting of subscribers, held at the Westminster Palace Hotel, last week.

The Cat Show held at Staines was a great success. Mrs. Slingsby, who made numerous entries, was most successful, and Lady Decies carried off some prizes. The show was very well managed, and the new disinfectant Autozone kept the air in the hall beautifully pure and sweet.

CAGE BIRDS.

HOW TO MAKE A GARDEN AVIARY.

THE budding aviarist, and very often the more experienced breeder of birds in cages, too, sooner or later evolves a desire to possess a trim little garden aviary. Certainly, the possession of a properly-appointed structure of this kind is an ideal form of bird-keeping, and adds greatly to the pleasure to be derived from this hobby.

But how to make the aviary is often a very puzzling question to the would-be owner, although the construction presents but few difficulties to anyone that is at all handy with ordinary tools. On the other hand the details are not so easily explained in writing without the aid of plans or designs.

Nevertheless, as several correspondents desire advice on the subject we will do our best to describe the construction of a garden aviary in such simple and non-technical terms that anyone should be able to carry out the work without further trouble.

Aspect and Position.

These points must be thought out and decided before any work is touched. The ideal aspect is one that is open to the south-east and south-west, with a little shade from the sun during the middle of the day, and enclosed on the north, east, and west sides.

A position under trees or overhanging tall hedges is to be avoided, not only on account of the dripping from the leaves in wet weather keeping the aviary in a damp miserable condition, but also because they often allow mice and other natural enemies to gain access.

These pests must be excluded with the utmost vigour, as they spoil a large amount of

food, and cause a vast amount of misery besides. In preparing the site it is best and cheapest in the end to lay down a floor of concrete, extending a few inches beyond the limits of the structure on every side, so that rodents are prevented burrowing a road in from below.

Site and Shape.

These points are dependent one upon the other, and both are to some extent governed by the aspect and the locality where the aviary is to be erected.

Whenever a garden wall or some similar permanent structure can be utilised for one side of the aviary, a lean-to roof is the best and easiest for the novice to attempt, but when the aviary has to stand isolated a span roof will have to be made, which will require a little skill or knowledge of tenoning.

If one has the advantage of inspecting one of those small ready-erected cottager's greenhouses, it will serve as a capital working model, with this difference, that in an aviary only the principal framework of timber will be required, the numerous cross sections for carrying panes of glass being dispensed with.

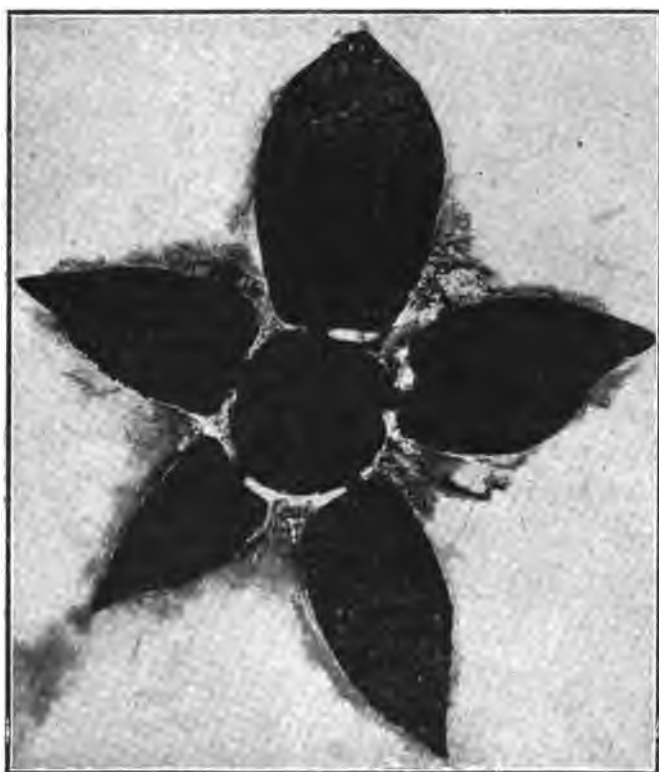
How to Begin.

We will suppose a lean-to roof is going to be made against a wall. Of course this can readily be applied to a span-roof, by simply regarding it as a half section, and duplicating it. The superstructure may be made of either three-quarter inch boards or bricks, to suit individual taste and pocket.

The size of the aviary will likewise be controlled by similar conditions, but for the sake of clearness we will suppose our example to be 15 feet long, 6 feet wide, 6 feet high to eaves, and 8 feet to ridge.

Mark out the ground space and at each corner excavate a hole three feet deep, and insert the corner posts. These should be planed red deal three inches square. Having placed them in position, and seen they are perpendicular, and each sunk in to the correct depth, fill in the holes with concrete, and allow it to set hard. The total length of the two front posts must be nine feet, and of the back post eleven feet.

We shall continue this subject next week.



Transverse section of Apple Core with the pips removed.

What is it?

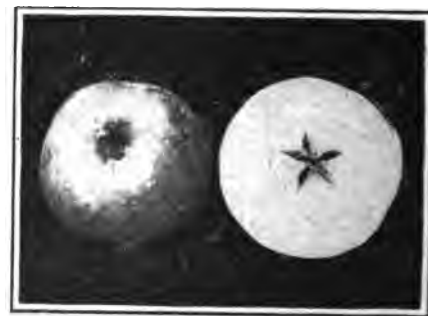
Result of our Second Skill Contest.

The enlarged photograph given in our issue of February 9th proved a more difficult problem for readers than the first "What is it?" Some thought the curious photograph represented a gas-flame, others a daffodil, others the head of a fancy nail. Scores of articles were suggested, including ivy blossom, pattern of wall-paper, section of sponge, a pin-cushion, a clove, a beetle, and a fancy hat-pin. These, however, were all wide of the mark. Those who thought the photo showed the calyx of an orange were nearer, and nearer still were readers who suggested as the correct solution "the eye of a pear," and "the eye of an apple."

When, however, we came to those who said the photo represented a section of an apple, and others who still more accurately said it was a transverse section, we came to those who knew what they were talking about. These solutions were correct so far as they went, but fifteen readers sent in answers that were absolutely correct, and among these the prize, with a small amount added to it, has been equally divided. Each of those whose names are given below will receive one shilling and sixpence.

The correct solution was: **Transverse section of an apple magnified, showing the core with pips removed.**

PRIZE WINNERS. Mrs. Warwick, 5, Price's Avenue, Cliftonville, Margate; L. M. Curtis, Brant House, Holbeach; J. Tickell, 17, Chanurke, Bedford; L. G. Whall, 19, Shaftesbury Road, Ravenscourt Park, W.; J. Fletcher, jun., Ladyhough, Chorley; Miss F. M. Clarkson, Alpina, London Road, High Wycombe; W. N. Kelly, 11, Onslow Road, Fairfield, Liverpool; E. C. Jackel, jun., 82, Gordon Street, Glasgow; W. Clunne-Lees, William Street, Ryecroft, Miss Hepwell, Vicarage Lane, Chigwell, Essex; A. E. Gill, 69, Steven Street, Stretford, nr. Manchester; Miss B. Vallancey, 4, Worcester Avenue, Clifton, Bristol; L. F. Leonard, 4a, Hillfield Gardens, Muswell Hill, N.; Mrs. J. W. Burgess, 2, Paget Road, Stoke Newington, N.; A. Britten, 11, Bennett's Hill, Birmingham.



Reduced Photograph of section of Apple.

The Garden.

Work for the Week.

An Important Week.

THE first week in March is important in the gardener's calendar. Seeds of many kinds must be sown; pruning that has been left over must not be left a week longer; all digging operations must be wound up; crops on the ground, such as early cabbages, will require to be hoed and afforded a little stimulant, nitrate of soda being excellent for the purpose if applied at the rate of 2 oz. to the square yard.

Early peas should be sown. We may remind our readers that peas pay for sowing in boxes of good soil, to be kept in a frame near the glass, supplied with air and sunshine in favourable weather, and hardened off when six inches high before planting them in rows in the garden. Those who know peas only when grown thickly on the ground would be astonished if they saw what a single plant develops into when treated rationally.

The Greenhouse.

The greenhouse department must also receive all the attention possible now. Seeds of begonias, gloxinias, primulas, and all kinds of tender bedding plants must be sown at once. The propagating frame should be full of cuttings of coleus, fuchsias, heliotropes, bouvardias, Paris daisies, and the numerous other soft wooded plants which require to be renewed from cuttings every spring.

Tropical Plants.

Tropical plants are not so much grown as they used to be; still there are ferns, dracaenas, evergreen begonias, palms, eucharis, ixoras, and climbers like bougainvillea, stephanotis, aristolochia, dipladenia, and alamanda which are all certain to find many admirers among British gardeners.

The stove therefore must be overhauled in March, cutting down leggy things, using the tops as cuttings and the bases for lateral shoots; repotting or top-dressing and cleaning, and, most important of all, destroying all the worn out and hopeless cripples which too often are kept to the disrepute of tropical gardening.

General Work.

Climbers generally should be cut back with what we call severity; they all do better when treated on what is known as

the restricted or spur system, just as grape vines do.

This spring pruning offers a good opportunity for getting rid of insect pests by burning the prunings and dressing what is left of the plant with a good insecticide, such as paraffin emulsion.

The tubers of begonias will have been started ere this by placing them on shallow boxes of soil in a warm house. If they are intended for pot cultivation they must be kept close to the roof glass in a light position where the temperature does not fall below 50 degrees and the atmosphere is kept moist. Started now in a warmer house with a minimum temperature of 55 degrees and treated as stove plants, but allowed plenty of fresh air, these begonias may be had in full flower by the end of May.

Water Gardening.

Water gardening is growing in popularity. Where a supply of water is provided by a stream, or even a ditch fed by a spring, a little ingenuity enables one to construct a water garden and bog in which a large number of both beautiful and interesting plants are easily provided for. In water a foot deep the hardy nymphaeas, now numerous in variety and cheap in price, can be satisfactorily grown. Then there are the Kaempfer irises, in themselves a lovely garden; the kingcups, frog bit, water soldier, some of the primulas, especially rosea and japonica, sagittaria, and bogbean. These, and many other water or bog loving plants can all be provided for at very little expense.

An article upon "A Water Garden under glass" appears on page 228 of this issue.

The Snowdrops.

BELOVED by everybody, these are the mid-winter flower par excellence, appearing to best advantage when naturalised in grass. Snowdrops are not at all particular in their requirements, and, indeed, will usually increase if left undisturbed. We suggest that when the bulbs are purchased in quantity in autumn, as they can be quite remarkably cheaply, a few should be planted in pots for the decoration of the greenhouse in January. They will not bear any forcing, but if brought along in a cold frame will give great pleasure when in flower.



[Phot.]

Snowdrops.

They may be easily grown and the bulbs are cheap.

[W. J. Vasey.]

Constructive Work in the Garden.

The weather lately has not been favourable to any large garden operation, such as rockery making, the formation of paths or the transplantation of large evergreens. It is not, however, too late in March for such work. There is no more enjoyable undertaking in horticulture than that of making a new garden or reconstructing an old one.

The laying down of lawns, planning of beds and borders, selection of sites for the rockery, the rosery, the aquarium, the wild garden, and the garden house.

Then the choice of tree, shrub, herb, bulb, and fern for the different positions and their arrangement on lines that will be pleasing to the eye and suitable to the needs of the plants themselves—this, we repeat, is delightful work, and March is the best month in which to carry out these various operations.

About a dozen distinct species of *Galanthus* are recognised, some of these being autumn flowering and there are also numerous forms. *G. Elwesii*, the giant snowdrop, from Asia Minor, is a fine species, but it requires sheltered positions and does not seem to succeed well everywhere. *G. nivalis*, the common snowdrop, is a native plant.

Garden Query Answered.

Bogbean.—Sow the seeds of bogbean at once in the place where you wish to establish the plant. The leaves possess bitter tonic properties and in large doses are cathartic and emetic. They are little used at present, but were formerly in request for fever, gout, and rheumatism. They are used in Sweden as a substitute for hops. We are unable to say if this property is in the flowers also. (to M. R. BRIST, Kirkcaldy.)

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page v.) out from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Imitative Flowers.—The suggestion that natural root-grafting might take place between plants growing close together and influence the character of the flowers has already been discussed, and is regarded as improbable though not, of course, impossible.—(to J. W. WINSON.)

Puss Moth.—Your puss moth will come out in May or perhaps earlier if it has been kept in a warm place.—(to A. GREGORY.)

Wood Pigeon Disease.—The cause of death of the woodpigeon which was picked up in good condition but with the beak soft and yellow is the epidemic which is raging among the woodpigeon flocks in Hampshire and other counties. It appears to be the same disease as occurs in over-crowded pigeon lofts sometimes, and is known as canker. It is highly contagious.—(to G. E. ALLEN.)

Notes on Postcards.—No, there is no objection whatever to notes being sent for publication, etc., on postcards, provided that a little margin is left on the card for the editor's pencil.—(to LADY M. S. J., Botley.)

Orange with Skin Inside.—It is not very unusual for fruits, like the orange enclosed, to have folds of the outer skin growing inwards towards the middle. Such fruits are made up of a number of "carpels," and I believe that originally each "carpel" was a separate fruit. If so, the tendency of the skin sometimes to grow between the carpels would be a partial reversion to the ancestral type.—(to C. H. BURRELL, Richmond.)

Extraordinary Egg.—It is not unusual for a hen to lay two eggs in one, but a triple egg is rare. It is, however, only an indication that the hen is functionally diseased.—(to "B. M. H.")

When Snipe "Drum."—Yes, the writer in *Pearson's Magazine* was rather confusing the seasons when he coupled "the drumming of the snipe" with "the ringing of the skates"—as sounds of the country in January.—(to LONE HUNTER.)

Site for Nesting-boxes.—Both tits and robins probably prefer nesting-boxes which are placed in the shade, but the great thing to take care of is that cats, rats, or mice cannot reach the entrance. Therefore, the box should not be among branches.—(to W. POTTER.)

Nests of Sandpipers.—Many kinds of sandpipers, including the common sandpiper, nest on the ground, but the green sandpiper and the wood sandpiper of Europe, and the solitary sandpiper of North America nest, as Mr. Pycraft stated, rather high in the old nests of other birds.—(to R. BELL.)

"Mallard" and "Wild Duck."—The mallard is the common wild duck, but sometimes the name is restricted to the male. It was an accident that the two photographs on page 187 were named respectively "Mallard's Nest" and "Wild Duck's Nest," as though a distinction was drawn between them. "Drake" is the male of any kind of duck.—(to J. W. S.)

A Cannibal Mouse.—It is not an uncommon thing for one mouse to kill and partially eat a fellow captive. This is especially likely to happen if two males are put together.—(to A. EMSLEY.)

Hawks.—Undoubtedly the hawk's chief weapons are its talons. Though the beak may also be used in self defence, its ordinary employment is only to strip and tear the flesh of quarry which has been killed by the grip of the talons.—(to H. VINNICOMBE.)

Stars Identified.—The bright star which has been skirting the south-eastern horizon during the evenings of January and February is the first magnitude star, Sirius (the dog star), in the constellation Canis Major (the great dog). The smaller object has no real connection with it. The polar star (Polaris) can be best found by means of the "pointers," i.e., the two conspicuous stars forming, at this time of the year, the lower portion of the well-known "Plough."—(to A. J. KEEM, Bwlich, R.S.O.)

Correction.—In an article upon Jupiter (page 181, February 9th) the rotation period should have been given as 9 hrs. 55 mins. 36½ secs.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

ASTRONOMY.

THE NORTHERN LIGHTS.—Further records of the display have come in, all dated February 9th, from Northwich, Cheshire (G. Owen), Jordanhill, Renfrewshire (T. Barclay, B.E.N.A.), Brewrod, Stafford (B. N. Wale). "The grandeur of the whole effect," says one observer whose description we would like to publish had we space, "was appalling and made one feel exceedingly small." **SUN COLOURS.**—Remarkable sunrise and sunset in Devonshire on February 13th. A curious series of dark spots visible on the sun; unusual at this period.—(A. H. Swinton.)

ANIMALS.

STOAT, female, in full white coat, Challock, Kent, February 1st.—(W. Shilling, jun.) Two all white with brown patches on head, Holbeach, Lincs., February 13th.—(L. M. Curtis.)

BIRDS SEEN, ETC.

BLACKHEADED GULLS.—Flocks of 70 or 80 continued to haunt lawns near Bournemouth, where they were fed during the cold weather, February 14th.—(A. E. Gardner.) **GULLMOR** taken many miles up the river near Bere Aiston, Devon.—(H. J. German.) **RED-THROATED DIVER** shot near Worcester, February 9th.—(A. Quatremain.) **BITTERN,** very weak, caught near Arbroath, January 21st.—(W. Clyne.) **HOOPOE** reported seen near Maidstone, Kent, February 8th.—(F. Bartholomew.) **BITTERN.**—About January 30th dead one picked up, which had been killed by a fox near Brockenhurst, Hants. Two others seen in the district.—(G. Lyle.) **GREEN PARROT,** living at large upon hawthorn berries in the Queen's Park, Glasgow. Seems quite at home, though much chased by other birds.—(F. W. Jeffery.) Another, feeding in the same way, in Kew Gardens.—(F. Gammon.) **VERY LARGE BIRD,** dark coloured, with remarkably long and powerful bill, remained for the most part of three days until February 1st on the top of a factory chimney at Lemington, near Newcastle.—(The Rev. Canon Dison.) [Probably a cormorant; but perhaps some reader who saw it can say.—Ed.]

BIRDS ON MIGRATION.

SAND MARTIN.—"On January 31st, at Starcross, on the Exe, a sand martin flew quite close to me.—(C. Wynne-Roberts.) **CUCKOO** heard at Cambridge, Cornwall.—(*Birmingham Daily Mail*, February 13th.) **FIELDFARES.**—Flocks passing over Norwich to N., February 16th. Wind S.W.—(R. Gillwater.)

EARLY NESTS.

ROBIN'S with three eggs in old stable lantern at Little Baddow, Essex.—(*The Daily Mail*, February 9th.) Nearly fledged young one found, February 3rd, near Barnstaple, Devon.—(W. Baker.) **SPARROW'S** egg found at Horsham, Sussex, February 16th.—(R. C. Knight.) **SPARROW'S** with three eggs, February 9th, at Glasgow.—(J. S. Crawford, B.E.N.A.) **BLACKBIRD'S** with two eggs at Epsom, Surrey, February 14th.—(E. J. Adams.)

BIRDS' SONG.

SKYLARK, HEDGESPARROW, BLACKBIRD, SONGTHRUSH, appear to have been singing everywhere; but **ROBINS,** as usual at pairing time, have been less heard. **WREN,** at Cullen, Banffs, February 8th.—(J. Gowan.) **TREE CREEPER,** near Wellington College, Berks, February 2nd.—(J. H. Hay.) **CHAF-FINCH,** near Liverpool, Lancs., February 16th.—(J. O. Caldwell.) **NEAR WELLS,** Norfolk, same date.—(E. K. R.) **AT HORSHAM, SUSSEX,** same date.—(R. C. Knight.) **AT LECHLADE, GLOS.,** same date.—(H. S.) **NEAR WELLINGTON COLLEGE, BERKS,** February 10th.—(J. H. Hay.) **RECOMMENDED** near Bourne-mouth, Hants, February 16th.—(A. E. Gardner.) **HAYES COMMON, KENT,** same date.—("Chameleon.") **GREENFINCH** at Lechlade, Gloucester, February 10th.—(H. S.) **GOLDCREST** near Wellington College, Berks, February 2nd.—(J. H. Hay.) **BLUETIT** near Wells, Norfolk, February 16th.—(E. K. R.) **WILSHIRE, LEICS.,** February 10th.—(R. G. and O. S.) **YELLOWHAMMER,** without final note, at Lechlade, Glos., February 16th.—(H. S.) **CULLEN, BANFFS, FEBRUARY 8th.**—(J.

Gowan.) **HAYES COMMON, KENT, FEBRUARY 10th.**—(A. C. S.) **CORN BUNTING,** at Cullen, Banffs, February 8th.—(J. Gowan.)

MARKED BIRDS.

STARLINGS.—115 starlings have been caught marked with a metal ring and liberated at Musselburgh, Midlothian, since the middle of December. News of these birds will be welcome.—(R. Tomlinson.) **BLACKBIRD.**—A red blackbird with splashes of white caught near Loughborough, Leics.—(*The Echo*.) [By "red" doubtless is meant the ruddy brown colour of the breasts of some young female blackbirds at this season.—Ed.] Almost pure white one in the grounds of the Woodburn Sanatorium, Edinburgh.—(A. N. Robertson.) Besides several white and pied ones this season, one white with grey patches on wings and a dusky tail, near Rainworth Lodge, Notts.—(J. Whitaker.) (This observer notes that vari-coloured blackbirds have been unusually common in Notts this winter. To judge by our records this has been the case elsewhere also.—Ed.) **JACKDAW** with one white wing in the Meadows, Edinburgh.—(A. N. Robertson.)

LONDON NOTES.

REDWINGS in the Green Park, February 8th.—(G. H. Davey.) **LITTLE AUK** shot within ten miles of London.—(R. C. Barnes.) **GREEN PARROT** at Kew.—(See above.)

NOTES FROM THE BELL ROCK LIGHTHOUSE.

February 11th: The usual winter-feeders—eider and long-tailed duck—and a few attendant gulls still remain. Shags have been unusually plentiful, and have often roosted on the lighthouse. Three little auks were one day seen feeding near Gannets returned to their breeding haunt, the Bass Rock, a month ago, much earlier than usual. A seal, the first seen for some time, was here to-day.

NOTES FROM ITALY.

SWALLOW seen at Pisa on December 24th. Several **BLACKCAPS** seen in Rome, evidently wintering there.—(J. Gowan.)

CURIOUS FEAT.

PIGEON with five toes on the right foot and only one on the left at Glasgow.—(J. S. Crawford, B.E.N.A.)

WILD PLANTS.

HOLLY and **COWSLIP** in bloom near Redcar, Yorks, February 14th.—(H. W. Cook.)

Influenza and Deafness.

This winter with the season's usual ailments, shows a marked increase in the number of cases of Influenza, and this is an opportune moment to give a timely word of advice to our readers. It is not so much in influenza itself where the mischief and danger lie, but in the after effects.

One of the most distressing and inconvenient complaints, and perhaps the most common, following influenza is deafness, which when once the symptoms appear, only too frequently develops into a permanent affliction.

Let us study the connection a little more closely. The problem is a serious one. In these days of strenuous competition, no one can afford to be in any one sense defective.

First and foremost, you have to clear out of your mind the mistaken idea that the ear drum is the most important part of the hearing apparatus. This old belief can be pitched aside with the "flat-earth" theory.

We must get behind this delicate membrane and fix our attention upon the far more important inner structure of the ear. Lying just behind the ear drum and resting against it are three small bones which vibrate in unison with the ear-drum. These bones fit one another and are controlled by minute muscles which are the tiniest in the body. The first of these three bones is in actual contact with the ear-drum. At its other end it fits into a second bone which in turn fits into a third. This last one of the series is in contact with the second very sensitive drum-head stretched over the auditory nerve itself, by means of which all sounds are ultimately conveyed to the brain.

It has been proved conclusively that at least 90 out of every 100 cases of deafness are due to some injury or disease attaching to this chain of small bones. There is either inflammation, such as follows influenza, displacement, or adhesion. Directly any one of these things happens, the hearing must of necessity be affected and, unless the evil be taken in time, serious and lasting injury may result. Such trouble may happen to your ear; is perhaps developing now.

Any reader suffering from deafness should write at once to Prof. G. Keith-Harvey (Room 816), 117, Holborn, London, E.C., for Illustrated Booklet, fully describing an entirely new self-applied method which has already effected hundreds of truly marvellous cures.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 95. VOL. 4.

MARCH 9, 1907.

1d. WEEKLY.

Some Lunar Phenomena Explained.

By NORMAN LATTEY.

EVEN those who scarcely pause to speculate on such matters must have occasionally experienced a curious wonder that it is invariably the same face of the moon that is seen month after month and year after year.

With most of the planets the surface markings are diversified by regular rotation of their respective globes. Even the sun gives us a slowly moving view of his sun-spot groups whenever they occur, and it is evident that our earth must provide the Lunarians, Martians, and Jovians (if there be any) with a singularly interesting panorama of terrestrial features. Yet in seeming disregard of the universal rule, the moon persists in keeping the same stereotyped disc turned towards us without at any time satisfying our curiosity as to the topography of its averted side.

The movements of the moon were a great puzzle to earlier astronomers, and even now, in the face of observed effects, a good many folk find it difficult to realise that our satellite does actually rotate on its axis in the same way as other well-ordered celestial bodies. The monotony of a changeless aspect compels the conclusion that the moon is not only a dead world in a general sense, but also inanimate as regards individual motion.

Such, however, is not the case. The explanation lies in the fact that our satellite occupies exactly the same time to effect a rotation as it does to complete a revolution. It is this coincidence in the two movements that renders the lesser one imperceptible, human experience being more accustomed to a greater axial than orbital speed.

The reality of lunar rotation will be evident from the accompanying diagram, in which E represents the earth and the small disc the moon. It will be obvious that whereas at position A the shaded hemisphere (averted from the earth) is directed towards the top of the page, at position B it has moved round to the left. Similarly when position C is reached the shaded side is pointing downwards in the opposite direction to that of A. In other words, the moon has accomplished half a rotation as well as half a revolution. At D we have the reverse position to B with the shaded portion being restored to A.

Since therefore the same side has in turn faced every point of the compass it follows that the moon must have executed a complete rotation. In fact the rotation would

present quite an ordinary aspect were the observer situated outside the lunar orbit. This can be easily demonstrated by plac-

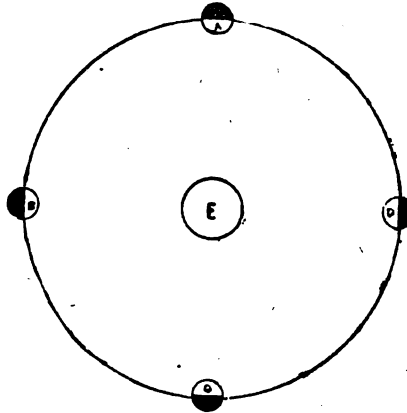


Diagram illustrating the moon's rotation.

ing a penny on the table to represent the earth and sliding another round it a few inches away always keeping the King's head turned towards the stationary coin.

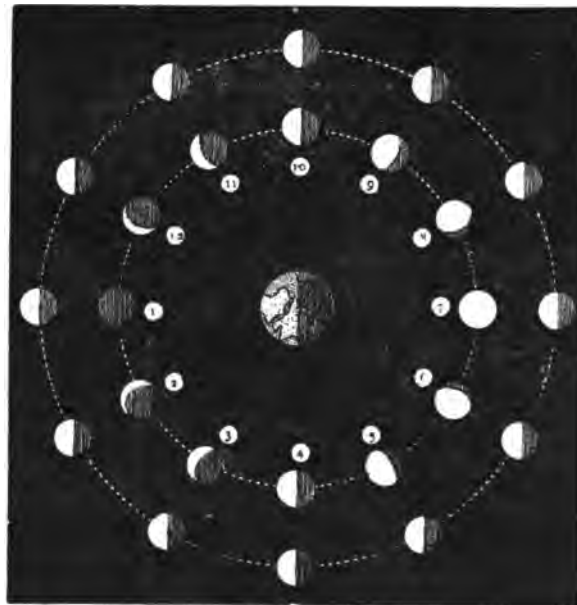


Diagram illustrating the moon's phases.

Were the moon's rotary motion to become retarded or hastened in ever so small a degree we should, of course, gradually see its entire surface. As it is, owing to the elliptical form of our satellite's orbit and the slight inclination of its axis to that orbit, we are able at times to look over the edge a little in all directions. In

this way features along the rim come into slightly better view, though the extension is very trifling.

The causes of the moon's phases, though familiar enough, are apt to be puzzling. Another simple diagram will, however, make the matter clear. Let the central globe, as before, stand for the earth and the inner row of discs the moon, as seen from the earth, at twelve stages of its revolution. The outer row of discs representing the moon as actually appearing in space with its side towards the sun continually illuminated by the solar rays which are streaming from the left.

Now it will be obvious that at the periods when the moon is between the earth and the sun, as at 1, the darkened and consequently invisible hemisphere is turned to the former, and it is "new" moon. Should our satellite happen to be in a direct line with the sun an eclipse of that luminary takes place. At 2 a terrestrial observer can just see the left hand edge of the disc lit up and the result is a crescent which at 3 has grown larger.

At 4 half the sunlit hemisphere becomes visible, and we call it "first quarter" because one fourth of the moon's orbit has been traversed. The phase increases until 7, when the whole disc is illuminated and we have "full" moon. It is here that lunar eclipses occur should the moon happen to plunge into the great lake of shadow cast by the earth. The waning of the moon is brought about in the same manner by the process being reversed, "last quarter" occurring at position 10 and the return to "new" at 1.

High and low moons are effects due to the same cause as the seasons. As has been seen from the foregoing, the full moon must always be in the opposite part of the heavens to that occupied by the sun. If therefore the sun be high in the sky at midday (as it is in summer in the northern hemisphere) it will only dip a little below the northern horizon at midnight.

The moon can consequently only be a small distance above the horizon at that time of the year. Conversely in winter when the sun is low at midday and descends far below the northern horizon the moon has a high elevation above the southern part of the sky. By this accommodating arrangement Nature makes up to mankind for the early withdrawal of sunlight and gives us the moon "to rule the night when the hours of darkness are longest."

Country-Side Notes.

Warham, Norfolk.

"How beautifully is suggested to us the value and excellence of deciduous things, for were all mantles to remain for ever, how much should we remain unconscious of? Light and summer that reveal so much hide even more. Darkness, that we think so dreadful, takes us away from the earth to the heavenly lamps, and that which till now was silent, begins to speak."—LEO. H. GRINDON.—Sent by F. Fuller.

READERS will observe that we are starting a "Sale and Exchange" page. This has been so frequently suggested by readers that—now that the paper has been enlarged—I have decided to try the experiment of devoting space to it. It is not so simple a matter as you might suppose. At the outset it involves considerable trouble in organising a deposit system to ensure that buyer and seller will, so far as is possible, receive complete satisfaction every time. To this end our rules must be most carefully observed by all parties; and the scale of charge is so low that unnecessary correspondence must be spared us if the experiment is to prove successful. Our wide circulation in the country, as well as in the cities, should bring especially into touch those who desire to let with those who desire to obtain furnished and unfurnished houses or apartments; and I trust that this will become an important weekly item in the "Sale and Exchange" page throughout the holiday seasons of spring and summer.

I am very grateful to readers round London who have responded so willingly to my request for information as to the places where the nightingale can be heard in season within a 25-mile radius of the Metropolis. I have received notes from the following places:—Navestock (near Romford), West Drayton, North Mymms (near Hatfield), Walthamstow, Chigwell, Queensmen (via Putney), Ruislip, Chingford, Weybridge, Reigate, Woodford, Richmond, Bushey, Broxbourne, Winchmore Hill, Purfleet, High Beech, Feltham, Staines, Chertsey, Wimbledon Common, Hendon, Cookham Dean (near Maidenhead), Petersham, New Barnet, Hadleigh Wood, Edgware, Stanmore Common, Shenfield and Hutton Station (near Brentwood), Enfield, South Croydon, Crowhurst, and Loughton. Will readers who know other places where the nightingale can be heard in season, within the 25-mile radius of London, send me the facts on a postcard? By so doing they will be helping towards the publication in THE COUNTRY-SIDE of the most useful and interesting natural history map which has been produced for a long time.

For shortcomings and omissions both in these Notes and in other parts of the paper which are written with my own hand I must, for this issue at any rate, ask indulgence. Pleurisy is, I find, an illness which strikes one suddenly, and strikes hard. That I have been able somehow to maintain the continuity of my work during this week is a great deal to be thankful for; but greater still is the knowledge that our readers, knowing the facts,

will not be discontented because questions have not been answered, suggested topics have not been discussed, and so on. Next week I hope to have a better story to tell, and I hope, too, then to begin "The Story of Our Birds."

In our "Nature Records" last week some readers may have noticed with surprise a side-heading of "ANIMALS," followed by another of "BIRDS." Every text-book in the country tells us that birds, as well as reptiles, fishes, insects, and worms, are "animals"; and, therefore, my choice of this heading for records relating to such creatures as stoats in contradistinction to birds may have seemed to be a blunder. But, as a matter of fact, it was the result of a final—I hope—decision of a very troublesome question. In ordinary conversation almost all of us draw a line of distinction between "animals" and "birds" or "insects." We think of an animal as a hairy, hot-blooded creature with four limbs; of a bird as a feathered, hot-blooded creature with four limbs, of which two have become modified as wings; of an insect as a creature with a body of several distinct parts and six legs.

Our teachers tell us, however—and, etymologically speaking, they are quite right—that birds and insects are animals, and that we ought to use the word "mammal" when we wish to speak of horses, dogs, lions, etc., as belonging to a class distinct from cuckoos or butterflies. Now, I have not seen any indication that the British public desires to adopt this word "mammal"; and I am on the side of the British public in the matter. The word is an ugly one, to begin with. Secondly, if we understand its meaning, it refers to a detail of structure which we do not ordinarily consider—or wish to consider—in our conception of an animal. When we look at a dog or a horse we do not mentally classify it by the fact that the female has "mammary" or teats; and the British public is right in refusing to like a word which has no better recommendation than this.

If the scientists who strive to force upon us this strict distinction between "animal" and "mammal" were strictly scientific they would have to admit that "mammal" is a misnomer to a certain extent, since there are mammals, such as the duck-moles, whose females have not those organs which would otherwise constitute a scientific justification for the objectionable name. And, apart from the scientific aspect of the matter, there is no sufficient excuse for the invention of such a word as "mammal" to replace the popular word "animal," in mere pedantic assertion of the fact that the latter is etymologically too vague. Many of the most useful words in the English language have parted company with their etymological significance, some even being used to express almost the exact opposite of the meaning with which their sponsors endowed them.

I have watched with sympathy the attempts of scientific writers to popularise

the word "mammal"; but up to date they have completely failed, and I do not think that they will ever succeed. I do not think that we shall ever persuade the British public to abandon the familiar distinction between, say, a horse as an "animal" and a sparrow as a "bird"; and I regard any attempt to coerce a people into using a word which they do not want to use, merely because it may be more correct etymologically than one which they have been in the habit of using is mere pedantry, and deserves to fail. So I propose to drop the word "mammal," except when dealing with strict scientific definitions, and to use the word "animal" instead, as signifying any four-limbed, hot-blooded animal with hair. At the same time I shall gladly yield to the wishes of our readers in the matter, and I should especially be glad of the opinions of our naturalist friends on the proposed innovation.

An Aberdeen reader, Mr. H. E. Shortt, returns to the question, whether weasels, etc., can "fascinate" their victims, in a way which shows that I failed to make the matter clear. It is a frequent failing of mine in stating briefly an argument which is quite plain in my own mind, to omit points that are necessary to make it plain to others. Thus, Mr. Shortt quotes with approval my view that in the course of evolution creatures can only acquire faculties which are useful to them; and that we cannot conceive any circumstances in which the habit of being fascinated by natural enemies could have been useful to rabbits; and then he asks, "But what of the others, the natural enemies? Would not they have found the power of fascinating their prey of the greatest use to them and by the same process of evolution might not the power have become one which is now universal among such species?"

This shows that I ought to have commenced my argument by explaining clearly that this supposed process of "fascination" must take place in the mind of the rabbit, if anywhere. The weasel might, as ages passed, have acquired various terrifying features—instead of which it has become an insignificant-looking little reddish-brown animal, perfectly adapted to hunt by stealth and remain invisible on the leaf-strewn ground in winter—but, no matter how terrible its appearance might be, it would only have made the rabbit run away the faster, unless at some time the latter had acquired a habit of being "fascinated." No development of the weasel could start this peculiar process in the rabbit's mind; and since the first rabbit which chanced to acquire it would have been caught and killed, it is manifest that nature could not have encouraged the habit by means of evolution. Therefore it could not have become a characteristic of rabbits in general.

Perhaps we are ill-qualified to see this matter clearly, because we, as human beings, are familiar with the idea of being "fascinated" by the ultra-terrible. But, although this may lead to disaster in some

few cases, it is really a useful development of the human habit of guiding conduct by reason. When reason is momentarily overwhelmed by horror the human being stands "rooted to the spot" until his reason resumes command. And in nine cases out of ten that moment of inaction saves the situation. When you start back, horror-struck, from a snake in the path, the frightened reptile creeps away. When your heart almost stops beating after a mysterious sound in the darkness, some harmless explanation presently offers itself. In either case precipitate action might have been calamitous.

* * *

But neither the rabbit, nor any other hunted animal can allow itself that momentary pause. Its action must be instantaneous and automatic, otherwise it would always be caught. In the mind of the rabbit, therefore, there is no material out of which this habit of being "fascinated" could have grown; and whatever qualities the weasel may have acquired, they will not work inside the rabbit's brain. Therefore, I say that weasels cannot fascinate rabbits. If they could, rabbits would long ago have ceased to exist.

* * *

Those who were present at the first meeting of the British Empire Naturalists' Association in September last will remember the eloquent appeal of Mr. Gawler to country members to help in making the holidays of children sent into the country in summer by the Children's Country Holiday Fund more enjoyable and interesting, by taking them out on country rambles and showing to them some of the wonders of the country-side. It is not every one who has the inclination or the ability to interest children in nature; but the matter is not to end where Mr. Gawler's appeal left it.

* * *

Mr. C. J. Chase, headmaster of the Gloucester Road School, Peckham—which (I have heard) is not only the largest of London schools, but has also won the leading honours in nature study—has compared the list of the B.E.N.A. with the list of places to which the London children are sent for their holidays in July and August, and finds that more than a hundred different towns and villages in England are represented on both lists. Therefore, he proposes to communicate with B.E.N.A. members in all those places, while the hon. secretary of the organisation which gives the children their holidays will communicate with its responsible representatives in the same places. Thus it is hoped to bring the two organisations into touch; so that there will be at least a chance that in more than a hundred places these London children will find sympathetic friends willing to take them for at least one walk in the country and tell them something about the interesting and novel common objects round them.

* * *

There would be no difficulty, for instance, for any country resident in preparing for the ramble, to ascertain beforehand the whereabouts of several birds' nests containing young, sunny corners where butterflies will be seen, nooks where beautiful wild flowers will be in bloom, and so on. Likely places for hares,

rabbits, squirrels, water rats, etc., will be marked. The haunts of snakes, blind worms, or lizards may be visited. Pheasants, partridges, moorhens, herons, wild-duck may be seen.

* * *

Speckled trout lurking in the shallows; schools of roach or dace racing together from view; painted dragon-flies, busy wasps' nests, colonies of caterpillars, beetles, bees, and flies—filled with such incidents a summer afternoon might be made a panorama of delight; and think what a red-letter day in the memory of the city-child would be that on which, by lucky chance, he saw a living wild fox sneak to covert, a stoat chase a rabbit, or a sparrow-hawk seize its quarry! I hope, then, that when Mr. Chase's appeal shall come to individual members of the B.E.N.A., they will, unless they distrust too much their own powers of telling children a few facts of interest in simple language, lend their aid to the good cause.

* * *

So many readers write to say that they have found amusement for themselves and friends in the "Planting" game which I described incidentally in one of these notes, that I am tempted to describe another. We have always called this the "Ending-the-Word Game." The player who begins gives a letter, as "H." He must have in his mind the name of some natural object—an animal, bird, reptile, fish, insect, flower, etc.—which begins with that letter. Each player must add a letter in turn, always having in mind a similar name, but taking care not to finish the name of any other natural object. The player who finds himself in such a fix that he cannot think of a letter that will not finish a name is allowed to try to cheat. That is to say, he may add on any letter which does not complete a name, even if he has no other name in his mind. But the next player can then challenge him to say what name he is thinking of.

* * *

The player who completes a name, or who has not a name in his mind when challenged loses one of the three "lives," or counters, with which each player starts; but if he is wrongly challenged, then the challenger loses instead. Suppose that the first player, thinking of a haddock, says "H"; the next player, thinking of a horse, adds "O"; the third player, thinking of a housefly, adds "U"; the fourth thinks of a hound, and adds "N"; the next player may think of a houndstongue fern, but he must not add a "D," because that makes "Hound," and probably he is unable to think of any other natural object whose name begins "Hound." In despair, perhaps he will add "T," trusting that the next player will not dare to challenge him, but will add another impossible letter, such as "E," and run the risk of being challenged himself. Skill in the game consists in giving the word a twist into a certain direction so that the final letter must fall to your most dangerous opponent. Of course, there is no need to limit the game to the names of natural objects; and in mixed company perhaps the best plan is to allow any English word, using a handy dictionary as referee in cases of doubt.

E. Kay Robinson.

The Carter's Song.

Twilight grey is softly stealing,
Folded are the sheep;
Homeward now the milkmaid calling
Cows from pastures steep.

Through the woods, and over meadows,
Guided by a gleam
From my lonely cottage window,
Home I ride my team.

Twilight fading into shadow,
Crescent moon above;
Thronging now the open doorway,
Curly heads I love.

GRISelda HERVEY.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Animals.—Fox, black one seen recently in Raisdale Valley, near Cleveland, Yorks.—(S. Cook.)

Birds Seen, etc.—BITTERN: I am glad to hear that the bittern reported seen near Hillington Hall, King's Lynn, Norfolk, has been carefully protected since the beginning of December, and was still there in the middle of February.—(E. K. R.)

SMEW: Fine male shot near King's Lynn, Norfolk, February 16th.—(The Honourable Mrs. Darnay.) [This is believed to be the only smew ever recorded for the locality.—ED.]

GREAT GREY SHRIKE seen February 1st at Navestock, near Romford, Essex.—(C. A. Miles.)

LITTLE OWL caught in rabbit-trap near Grantham.—(H. B. Sharpe.) [This bird haunts rabbit-burrows.—ED.]

BUZZARDS, three seen, Comrie, Perthshire, February 14th.—(S. Macpherson.)

EAGLE seen near Danby Beacon, Yorks., February 10th.—(S. Cook.)

Marked Birds.

WOODCOCK, white one shot near Peterhead.—(Seton P. Gordon.)

GREAT GREY SHRIKE seen February 1st at Kents Bank, Lancs., February 21st (F. W. Chadwick); with white collar at Wimbledon, February 15th.—(T. Calver.)

Birds' Song.

BLACKBIRD, full song recommenced February 17th, near Middlesborough, Yorks.—(S. Cook.)

YELLOW-HAMMERS and **CHAFFINCHES** reported singing, with, of course, **SKYLARKS** and **HEDGESPARROWS** from many places.

Early Migrants.

SWALLOWS: Flock seen near Wimbledon, February 16th (H. Randerson); two seen, Tottenham, February 25th.—(H. C. Britten.)

CUCKOO, "heard at Rosewarne Park, Camborne, Cornwall, February 8th."—(*Western Morning News*.)

Birds' Early Nests, etc.

MAGPIES returned to nesting-site for a day, February 10th, Shustoke, Warw.—(T. C. Mace.)

MOORHENS return to nesting-site, February 10th, Shustoke, Warw.—(T. C. Mace.)

PIED WAGTAILS return to nesting-site, February 23rd, near Kidderminster.—(C. A. Allen.)

WREN's nest with five eggs at Alphington, Exeter, February 13th (*Western Morning News*); with one egg near Hornchurch, February 26th.—(L. U. Jackson.)

HEDGESPARROW's nest with one deserted egg frozen to the nest February 10th, at Skellfield, Ripon.—(V. E. Brewer.)

Insects, etc.

February 6th, 10th, and 17th were evidently springlike days in most of the middle and north of England; because on those days **WASPS**, **BLUEBOTTLES**, **HOUSE FLIES**, **LADYBIRDS**, **DORBEETLES**, and hibernated **BUTTERFLIES** are reported by various correspondents.

Wild Plants.

HONEYSUCKLE in blossom since December near Belvoir Castle, Grantham.—(H. B. Sharpe.)



Queries, Answers, & Correspondence.



Correspondents will greatly oblige by writing on one side of the paper only.

Where Fieldfares Roost.—These winter visitors must sometimes roost in the trees, for, after they have settled down and darkness has come on, I have passed their roosting place, and just by walking near, put hundreds of them out of the trees. They would return almost immediately. Christmas week thousands of these birds were roosting in two plantations in Swithland parish.—G. F., Quorn. [Probably they roost in trees, when suitable open ground with rough vegetation is not available.—Ed.]

"Laying by for the Sore Foot."—A friend has a very pretty little dog, Billy. Billy is of the toy Pomeranian breed, and quite proud of his lineage. He is as lively as a bee and as merry as a cricket. Billy has one odd trait. Doubtless it is a throw-back to ancestors, that long antedate the most remote that figure in his long pedigree. When helped liberally he will sneak away part of his allowance. Some bird must have whispered in his ear that to a feast may succeed a famine. This praise-worthy peculiarity of providing for a doubtful future is not uncommon with dogs, and foxes are equally long-sighted. Lackagh is the highest mountain in this neighbourhood. From its healthy heights a great part of North Connaught, the contour of its hills and plains, and the rivers winding through them, is seen as are the Post Office

and Fleet Street from the top of St. Paul's. First time I went over its summit I was shown the foxes' dens, great cave-like holes, amidst the rocks, double doored. There were but a family or two of foxes at any time about, and we were not sure, the shepherd who accompanied me and I, but they all had fled or had been shot; but the shepherd was suspicious, and with reason. Some short time before he had lost, he knew not how, some of his best black-legged lambs. At last, on a tussock under the moss he had kicked aside he saw a little black leg. In another place he found a head buried, under a light covering I must say. "A fox's work," he exclaimed. "They are there still." And he was right. (Rev.) JOSEPH M'NEHAN, Creevelea, Co. Leitrim.

A Cat's Strategy.—We have a cat who is a very clever mouser. The other day he went up into a lumber-room and immediately returned with a mouse which he commenced to kill at the foot of the stairs. Hearing another mouse pattering above, he was about to make off to investigate, but on seeing the first mouse move one of its legs returned, and, picking it up, hurriedly ascended the

stairs. There was a sharp scuffle in the lumber-room, a patter upon the stairs, and the next moment puss had returned with the two mice in his mouth together.—J. J. TOWNS, Holbeach, Lincs.

The Last of the Quintains.—The curious object shown in the accompanying photograph, which is to be seen at Offham, in Kent, is said to be the only quintain now standing in England. At one time tilting at the quintain was the most popular of all English sports. The game is described by Stow in his "Survey of London." "This exercise of running at the quintain," he says, "was practised in London as well in the summer as in the winter, but especially at the feast of Christ-

locate, for, as with the peewit, the nearer you approach the nest the greater will be the distance separating you and the parent bird, its wail being gradually more painful.—R. BELL, Devonport.

"Shakespeare Gardens."—There is also a Shakespearean garden in Brockwell Park, Herne Hill. The park once formed part of a private estate, but when taken over by the L.C.C. the garden was still kept up. It is said that every plant mentioned in Shakespeare's works is to be found in it.—W. J. FAST, Ashmore Road, W.

Birds' Nest in Evolution.—Re Mr. Pycraft's theory that formerly all birds nested in trees,

I note that in his "Story of Bird Life," speaking of the Archaeopteryx, pp. 207-208, he says:—"In every other part of the skeleton it was distinctly bird-like in type. Nevertheless, many of these bird-like characters undoubtedly bespeak a reptilian origin." If this reptilian origin applies to birds generally, would not the earliest forms of birds have most probably laid their eggs on the ground, after the manner of their reptile ancestors? As the eggs would be very much exposed to accidents in this situation, some birds would have taken to making their nests in elevated positions, and later on to trees, as the powers of flight became more fully developed. Those which remained to nest on the ground developed protective colouration or else selected concealed spots. Some found strength in numbers and collected in colonies.—A. S. JOYCE, Beckenham.



Photo

[R. H. COCKS.]

The only Quintain now left in England.

Tilting at the Quintain was at one time a favourite sport in this country.

mas. I have seen a quintain set upon Cornhill, by Leadenhall, where the attendants of the lords of merry disports have run and made great pastime; for he that hit not the board end of the quintain was laughed to scorn, and he that hit it full, if he rode not faster, had a sound blow upon his neck with a bagfull of sand hanged on the other end." Dr. Plott also, in his "History of Oxfordshire," thus describes the quintain. "They first set a post perpendicularly into the ground, and then place a slender piece of timber on the top of it on a spindle, with a board nailed to it on one end, and a bag of sand hanging at the other; against this board they anciently ran with spears. Now, I saw it at Deddington, in this county, only with staves, which violently bringing about the bag of sand, if they made not good speed away, it strikes them in the neck or shoulders, and sometimes knocks them off their horses; the great design of this sport being to try the agility of both horse and man, and to break the board."

To Find the Common Sandpiper's Nest.—The nest of the sandpiper is quite easy to

locate, for, as with the peewit, the nearer you approach the nest the greater will be the distance separating you and the parent bird, its wail being gradually more painful.—R. BELL, Devonport.

A Screaming Partridge.—When on my way to the station, after a day's shooting last week, I was walking down the side of a fence in a stubble field when five or six partridges rose well within shot, and two fell to my gun, both "runners." On my dog getting hold of one of them it uttered such a cry as I have never heard a partridge make previously. It was no doubt a note of fear—such a noise as a young chicken makes when taken hold of by the hand, a sort of half scream and half "chatter"—I cannot very well describe the cry. My dog immediately dropped the bird and stood over it, apparently much surprised. He "pecked" at it once or twice, but did not pick it up again until it had ceased screaming. He then brought it to me alive. I have shot and gathered partridges for over thirty years, but never before had a similar experience. Of course, I have often heard a winged cock partridge "cluck, cluck" when about to be picked up.—W. CHAPMAN, Scarborough.

Plant Mimicry.—*Oncidium papilio* is the name of a beautiful orchid from Trinidad, which illustrates in a remarkable way the tendency of these flowers to mimic living creatures. Of the six divisions of the flower the three upper ones are erect and very thin, about three inches long, very suggestive of the feelers and the pushed-out tongue of a hovering butterfly. They are green outside and purple within.

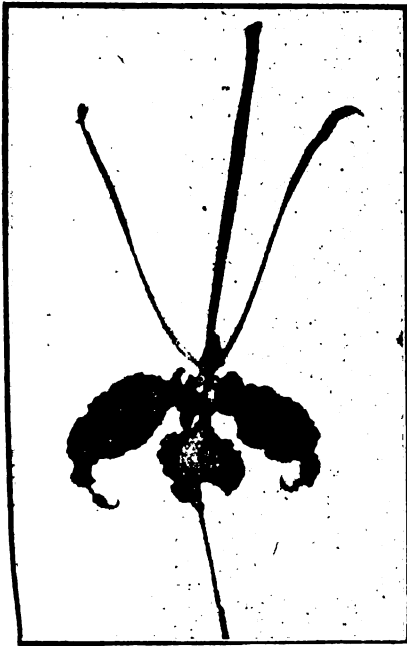


Photo.] [W. Moore.

A Real "Butterfly" Orchid.

Oncidium papilio, a Trinidad Orchid which mimics a butterfly.

Of the other three parts of the flower, the two side ones are like wings in shape, bright yellow, with broad stripes of orange-red; while the lowest—the "lip" of the orchid flower—is shorter and rather round, like an insect's fat body. This is marked with brown. As a whole the flower strikes one at once as being very like some amazing exotic butterfly. It would be interesting to know whether any butterfly of Trinidad is similarly coloured.

Flight of Moorhens.—I was sorry I did not mention in my former letter that my observation of moorhens flying very high, which you doubt, was always at night and generally by moonlight.—G. YEATES, Cowfold.

Ancestral Instinct.—A friend, a short time ago, brought a young fox into his yard. At the sight the fowls appeared terror-stricken, dashed about and flew on to the stable roof out of the way. Yet not one of them could ever have seen a fox or cub before! Curious, the persistence of instinct. A young dog might run about and they would never heed him.—(Rev.) JOSEPH MEEHAN, Creevelea.

A Tame Hare.—Last autumn some sportmen on the Waldegrave estate had the misfortune to shoot the mother of two very young hares, which were carried to the house of one of the tenants, where they were carefully nursed. Unfortunately, one of them died through accidentally falling down a flight of steps, but the other is now the pride of the house, taking its meals and romping about like a kitten. Puss, however, was not allowed to remain unmolested in its happy retreat, for the other day the huntsman's horn was heard not far from the house, and a hound belonging to the Wells Harriers actually entered the kitchen, puss jumping into its box just in the nick of time.—F. WEEKS, Shepton Mallet.

Tree Lore.—In the article on "Tree Lore," several trees are quoted in connection with the cross of our Saviour, but I do not find any mention made of the fir-tree, for according to the legend the cross was made of deal. Gretzer says the column was fifteen feet and the cross piece, to which the hands were nailed, was between seven and eight feet long, while Lipsius says the slab containing the accusations was three feet eight inches. The cross is said to have been found by the Empress Helena, mother of Constantine the Great, May 3rd, A.D. 326, under a temple of Venus, which stood close to the Holy Sepulchre; with it were two other crosses, nails, etc. There arose a difficulty as to which was the true cross. Macarius, patriarch of Jerusalem, advised the Empress to test them by touching with them a body at the point of death. The right cross being thus determined, Helena had it cut into three unequal parts; one was enshrined in a silver casket and given to Macarius, another part was sent to Constantinople, and the third to Rome for the church built by Helena and Constantine, and called afterwards the church of the Holy Cross; this part is now enclosed in one of the pillars that support the dome of St. Peter's.

The idea prevails among Highlanders that the cross upon which Christ suffered was made from the wood of the aspen or *Populus tremula*. Although I do not know where the quotation "And of this deed its leaves confess" is taken from, I feel rather inclined to think it is a variant of a German legend upon this subject, and herewith enclose a copy of Miss Eleanor Darby's translation.—

"The Lord of Life walk'd in the forest one morn,
When the song wearied nightingale slept on the thorn;
Not a breath the deep hush of the dawning hour broke,
Yet every tree, e'en the firm knotted oak,
The tall warrior pine, and the cedar so regal,
The home of the stork and the haunt of the eagle,
All the patriarchal kings of the forest adored
And bowed their proud heads at the sight of the Lord!

One tree, and only one, continued erect,
Too vain to show even the Saviour respect!
The light giddy aspen its leafy front raised,
And on the Redeemer unbendingly gazed.
Then a cloud, more of sorrow than wrath,
Dimm'd the brow
Of Him to whom everything living should bow;
While to the offender, with shame now opprest,
He breathed in these words the eternal behest.

Alas for thy fate! thou must suffer, poor tree,
For standing when others were bending the knee.
Thou'rt doomed for thy fault an atonement to pay;
Henceforth be a rush for the wild winds to sway.
Sigh, sport of their fury, and slave of their will!
Bow, e'en in a calm, when all others are still!
And shivering, quivering, droop evermore,
Because thou wouldst not with thy brothers adore.

The weak aspen trembled, turned pale with dismay,
And is pallid with terror and grief to this day.
Each tremulous leaf of the penitent tree
Obeys to this moment the heav'nly decree.
'Tis the sport of the wild winds, the slave of their will,
E'en without a breeze bends, when all others stand still;
And full of emotion, its fault doth deplore,
Sigh, shiver, and quiver, and droop evermore."

THOS. R. BEAUFORT.

Clapham, S.W.

The Microscope.

THE STUDY OF ANIMAL HAIRS.

THE preservation and mounting of animal hairs affords intelligent and interesting occupation, whenever a little leisure can be devoted to the work.

It is assumed that the microscopist has a knowledge of the few items that are essential for slide-making, the principal of which are three inches by one inch glass slips, thin glass covers, and a bottle of Canada balsam, all of which are obtainable of any of the usual opticians.

Having laid one of the fur-bearing animals under tribute, cat, dog, mouse, or rabbit, to the extent of a pinch of its fur, lay the hairs in a watch-glass or other small receptacle, and cover them with ether. This will remove any possible grease from them, as this would be a factor against success; from this transfer to turpentine for a few hours, a longer time being allowed for those varieties that are darker and thicker, so that their transparency may be increased; then remove to a glass slip, and after covering with a drop or two of Canada balsam, place the thin glass upon it. The mount being thus practically complete is ready for examination under the microscope.

To the unaided eye the hair of different animals shows but little difference, except in colour and length, but the microscope makes it clear that many differ both internally and externally, according to the class of animal from which they were obtained.

Most hairs usually exhibit two distinct structures, the cortical, or investing substance that encloses another that is known as the medullary, or pith-like. With some species the hair-exterior is seen marked with irregular lines, indications of the arrangement of flattened cells or scales.

In the case of the mouse, squirrel, and other small rodents, the medulla is very curious. It is as though built up of a series of cells that contrast sharply with the rest of the structure. In the bat tribe the hair is encircled by a ring of barbs, that stand out beyond the stem, whilst that of some of the lower creatures, the larva of the tiger moth, for instance, is seen to have these projections further accentuated, and they stand out like formidable thorns.

Seen in its natural position in a section of the scalp, the root of a human hair is a highly interesting object; a well-prepared slide of this contains a lot of structure that provides a sphere for much instructive observation; it shows the glands that open into the hair follicle for providing the growth with nourishment, the cup-shaped extremity of the root and the papilla that it covers; a tiny muscle that is attached to the follicle may also be

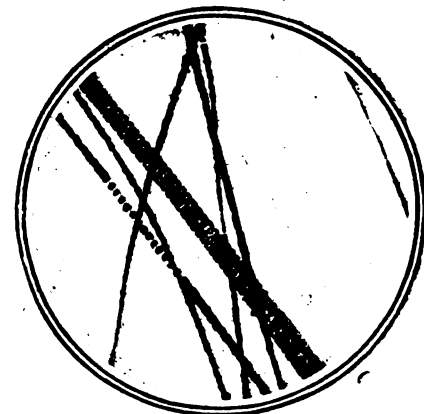


Photo.] [Copyright.

Hairs of Mouse.

Magnified 150 diameters.

seen, these in addition to the structures belonging to the scalp itself.

The accompanying photo-micrograph is of the hair of a mouse, as seen under a magnification of 150 diameters.

Week's Wild Life in Pictures.

(See page 243.)

The Emperor Moth—Missel Thrush and Nest—Listening to the Birds—Flowers of the Elm—Variegated Tubed Seaweed—Horse Chestnut—The Great Crested Grebe—Spawn of the Common Frog.

ON sunny days in the first half of March the male emperor moths (1) begin to appear flying swiftly to and fro over the heather. Aided, presumably, by an acute sense of smell in their plumed feelers, they find their way to the newly-emerged females of their kind. The males are lighter in build, smaller and more muddy in hue than the females, which, when their wings are closed, look exactly like tufts of grey lichen, though they still display the eye-spots that doubtless alarm small birds at close quarters.

2.—The missel thrush, or storm-cock, has the reputation of being our earliest songster and breeder amongst the thrushes, but the very early nests which one sometimes finds at the beginning of March are more often those of the song-thrush, which is also more ready to sing when the weather is mild in February or even January. Now, however, you may here and there discover the missel thrush at work upon its nest, which, although neat within, becomes more untidy in aspect from the outside as it approaches completion, because the nest is safer when it looks old and ragged.

3.—With the approach of spring each mild day brings new pleasures into the countryside, and more voices to the chorus of the glades. So insistent is the music of the thrushes that even children on their way from school cannot help pausing to "listen to the birds."

4.—We see little of the flowers of the elm—clusters of tiny ruddy blossoms—because most of them grow beyond our reach, only giving a fuzzy appearance to the topmost tracery of twigs against the sky. Later, when the flowers have been fertilised and passed away the tops of the elms will seem to break into leaf, before the real leaves appear. This is because the fruits of the elm spread into papery discs, which spring storms scatter on the ground like green confetti.

5.—The tubed seaweeds are so-called because their threadlike fronds are composed of several parallel tubes, making beautiful objects for the microscope when cut across. They belong to the red-spored class of seaweeds, and can generally be recognised as the tufts of thready weed, brownish-purple or ruddy in colour, which grow freely upon the larger olive seaweeds. The threads, when closely inspected, seem to be striped across throughout their length; this is because the surface cells are arranged in regular transverse rows. The commonest kind is the tufted tubed-weed, *Polysiphonia fastigiata*, but the kind in the picture, *P. variegata*, is, as its name implies, more marked in colouring.

6.—In the open you seldom find seedling horse chestnut trees, because grazing and browsing animals, especially deer, eat the fallen nuts greedily; but rabbits, squirrels and mice seem to dislike their flavour, and in woods at this time, under every horse-chestnut tree, you may find scores of last year's nuts sending out long rootlets into the ground, like the nut in the picture.

7.—Every year in early spring we gladly hear of the appearance of the great crested grebe in fresh waters, near our large cities, where these quaint and interesting birds are beginning to find adequate protection. In the country it is still too much the custom to welcome each migrant grebe with the shotgun, in order to set him up in a glass case, like the victim shown here. Far better to encourage it to breed everywhere, because it is one of the most interesting of birds to watch through field-glasses.

8.—In this picture every one will recognise one of those wobbling masses of spotted jelly

which now appear in so many ponds and ditches. With the first suggestion of spring hosts of frogs leave their hiding places and find their way to some sluggish water, where they mate in company, and the females deposit their piles of eggs—small and black at first, but quickly absorbing water through their transparent skins, until each mass of eggs becomes very much larger in bulk than the frog who laid them. The eggs of toads are somewhat similar, but instead of being in masses, are twined in long strings round and about the water weeds.

Country-Side Library.

"To Colonise England."

It is not the function of THE COUNTRY-SIDE to take any part in politics, even when these concern the country; but there is no reason why we should not recommend to thoughtful readers this republished series of articles, which were written in the *Daily News* by Mr. W. B. Hodgson, Mr. C. F. G. Masterman, M.P., and others. Even if you dissent from a writer's conclusions and disapprove of the remedy which he suggests, only good can come from acquaintance with the facts upon which these are based.

When an agricultural reformer laments that it would take ten years to eradicate the gorse which now grows in patches—or "blotches," as he calls them—on a hillside, some of us might prefer to keep the golden gorse; but we cannot deny that when ploughland is turned to pasture, and pasture becomes overgrown that agricultural decay is taking place in England, whereas in other lands co-operative, State-aided agriculture is going ahead.

Any man who calls attention to the serious state of British agriculture and the debased condition of the British farm-labourer is doing a patriotic work; and those who love the country should make it their duty to read and to hear what men of all parties have to say on the subject.

There is much, too, in this book with which all must agree. As explaining, for instance, why agricultural reforms come slowly, what could be truer than this?

"Governments are urban in their sympathies. Their members represent urban constituencies; the Press which supports and influences them is urban in its character and scope. The grievances of a suburb attract more notice and receive more attention than the silent, unvocal decay of an English countryside."

Knowing how urgent in many counties is the need for decent cottages and how keen the longing for some means whereby the worthy labourer may hope to improve his lot without deserting the home of his ancestors, we welcome, "To Colonise England" as a contribution, if a one-sided contribution, to the discussion of a question which will become a national danger, if it is left much longer in the background of politics.

"To Colonise England" is published by T. Fisher Unwin, at 2s. 6d. net in paper, and 3s. 6d. net in cloth.

"Gardening Made Easy."

THIS "Simple Handbook to the Garden" would seem to be more simple and gardening made easier for the beginners, for whom it is expressly written, if its contents were better indexed. Thus, chapter vi. is described in the

contents as "The Greenhouse" and chapter vii. as "Hardy Bulbous Plants"; but between these subjects in the body of the book come sections on insect enemies and friends, some useful hints about birds, how to keep flowers fresh, the use of galvanised wire, etc., and what should be a separate chapter on trees and shrubs.

Again, the plants in each section are arranged in the alphabetical order of their Latin names, but each paragraph is headed with the English name, giving the pages a very confused appearance. "Bee Balm," for instance, comes between "Marvel of Peru" and "Montbretia"; and "Michaelmas Daisy" between "Thrift" and "Aubrietia."

Apart from this defect of arrangement, which will cease to be troublesome when one grows accustomed to handling the book, "Gardening Made Easy" contains, perhaps, more sound and simple advice and instruction on the entire range of garden work than any work previously published at the price—1s.

"Our Kitchen Garden."

THE first edition of this useful little book, by Tom Jerrold, was published twenty-five years ago, and its re-appearance now with enlargements is welcome. The feature of the book is that it treats each of our well-known vegetables in turn, giving something of its history, brief but sufficient advice as to its cultivation, followed by careful instructions as to the methods of cooking it. An appendix at the end also gives recipes for a number of dainty dishes, which may be prepared from vegetables; and, to refer to only one of these, the housewife who is unacquainted with the excellence of curried lentils as a breakfast dish, will find the book worth buying for this recipe alone. It is published by Chatto and Windus at 1s. net.

Protecting the British Kite.—At a recent meeting of the Breconshire County Council Mr. Gwynne Vaughan said that anybody who had taken an interest in the protection of our rarer birds would know the difficulty there was in protecting them against the indiscriminating egg collector. The rarer the bird became, the more these collectors were on its track. He and others had been particularly interested in the protection of the kite in certain parts of this county, which he would not name for obvious reasons, and in order to show what difficulty they had in the work, he said they had to appoint one man to watch the nests by day, and another by night. This man was stationed in a sentry box, and he was pleased to say that on several occasions he had been instrumental in stopping people coming to the nest, presumably for the purpose of taking the eggs. It was the professional egg-looters he was very wishful to see stopped, for they were practically exterminating some of the rarer birds. Mr. Powys Cobb and Colonel Thomas supported the speaker and the County Council unanimously passed a recommendation to the Chief Constable to take what steps he could to assist in carrying out the order under the Wild Birds' Protection Act.

Ostrich Farming in Cape Colony.—The South African Products Exhibition, which was opened by the King on February 23rd, contains, among other interesting exhibits, a group of ostriches, consisting of male and female, with nest, eggs, and chicks, which has been contributed by the Albany Farmers' Association, Grahamstown, Cape Colony, and mounted by Rowland Ward, of Piccadilly. It should prove very attractive to visitors to the exhibition.

From a Reader.—I am delighted to hear of the enlargement of the already wonderful paper which I take, and always hope to, and which I recommend on every side. It is a never failing pleasure to me.—Yours truly, E. H. NORGATE, "Formosa," Brighton.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 244.)



1. Male and Female Emperor Moth, *Saturnia carpini*, slightly reduced (E. A. Golledge). 2. Missel Thrush, *Turdus viscivorus*, at nest, from life (T. A. Metcalfe). 3. Listening to the Birds (J. T. Newman). 4. The Common Elm, *Ulmus campestris*, in Flower (Mrs. J. Turnbull). 5. Variegated Tubed Seaweed, *Polysiphonia variegata* (J. H. Crabtree). 6. Horse Chestnut, *Æsculus hippocastanum*, Sprouting Seed (G. B. Norreys). 7. Great Crested Grebe, *Lophæthya cristata*, in Breeding Plumage, Stuffed (G. Parkin). 8. Spawn of Common Frog, *Rana temporaria* (W. B. Johnson).

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to B. N. Wale, The Grammar School, Brewood, Stafford.

Why do the poor and ill-nourished so often dislike fresh air?

Fresh air is colder than warm vitiated air and acts as a stimulus to motion. To enjoy the colder fresh air a reserve of animal heat is required to maintain the body at a comfortable temperature. The poor and ill-nourished have not the necessary reserve of animal heat needed, owing to insufficient or unsuitable food. Neither have they the energy to act up to the given stimulus. The warm vitiated air does not call for any reserve in the body. Hence their dislike of fresh air.

Why do the fingers prick and sting when they become warm again after having been cold?

Coldness of the fingers is caused by a temporary imperfect circulation of the blood and a contraction of the fleshy tissues. Vigorous exercise will cause the blood to flow more freely, and its forcing its way through the tissues acts upon the nerves and produces the prickling sensation. The feeling known as "pins and needles" is similarly produced.

When was the last of the Great Auks killed?

It has been stated that a great auk was killed near Vardo, in Norway, in 1848, but of this there is some doubt. According to authentic records the last great auk was killed in 1844 on a rocky island named Eldry, off the coast of Iceland. It is, we believe, now in the Royal Museum at Copenhagen. Although it has been reported that a great auk was killed in the Orkneys about 1840, the last authenticated appearance of the bird in Britain was in 1834, when two specimens were taken alive in Waterford Harbour. One of these was kept in captivity for about four months. The late Colonel H. M. Drummond-Hay used to relate that, in returning to Europe in 1852, he saw, when on the edge of the Newfoundland banks, a great auk within thirty or forty yards of the steamer.

Why does the use of the fan usually produce a sensation of coolness, and is it possible to feel warmer when being fanned?

The sensation of coolness is due to the accelerated evaporation of the perspiration from the skin due to the movement of the air. The less moisture there is present in a given volume of air—temperature and pressure being constant—the greater will be the rate of evaporation of a liquid with which it is in contact. In the case in point the moisture-laden air is continuously replaced by a drier atmosphere by the movement of the fan, and the rate of evaporation is increased. Heat is required for converting a liquid into vapour, whether it be

at or below boiling temperature. The required heat in this case is abstracted from the body, hence the sensation of coolness. One would feel warmer when being fanned if the atmosphere were saturated with moisture and the temperature higher than that of the body.

Which trees live longest?

In Britain the yew seems to be the tree of greatest age. There is one at Hedsor, Bucks, supposed to be 3,200 years old. One at Fortingal, Perthshire, 2,000 years, and several at Crowhurst, Surrey, 1,450 years old. There are oaks living which were planted before the Conquest, and therefore 800 years old. A Banyan tree in India is believed to be the one which, in Alexander the Great's time (326 B.C.), sheltered 10,000 men, hence more than 2,300 years old. Cedars still growing in Lebanon are believed to be the remains of the forest from which Solomon obtained his timber for the temple 3,000 years ago. The baobab tree is said to live over 5,000 years.

Why did the old tallow candles need constant snuffing while the present wax and composite do not?

The wick of the old tallow candle was composed of a number of threads only loosely twisted. This wick stood up straight in the centre of the flame, and, being shut off from the oxygen in the air, could not burn away, but accumulated in a lump, which gradually choked the flame until removed by "snuffers." The threads of the wick in a modern candle are plaited together, and the twist thus given to its fibres causes the wick to curl over; thus it reaches the outside of the flame, where the oxygen in the air enables it to burn away at the same rate as the wax. Further, in the modern candle the wick is treated chemically, helping complete combustion, and whereas in the old candles tallow possessing a low melting point caused the wick to remain excessively saturated and only partly burnt, wax has a higher melting point, and does not keep the wick overlaid with melted fat.

Why is it dangerous to sleep very near a lime-kiln?

The danger of sleeping near a lime-kiln has been shown on several occasions by the finding of dead bodies of tramps near lime-kilns, to which the men have crept evidently for the sake of warmth. The explanation lies in the fact that, in the roasting of limestone to form quicklime, a poisonous gas—carbon dioxide—is given off. As this gas is heavier than air it sinks to the level of the ground, and a person sleeping near the kiln would become enveloped by it, and, for lack of oxygen, die from suffocation.

Why will not stones do for fuel as well as coal?

What are sand pillars?

To what extent is the laburnum poisonous and what animals can eat it without ill effects?

What are sparks, and why when sticks of wood are laid upon a fire, and sparks begin to fly, is there a crackling sound?

What results would follow if everywhere ice were suddenly to become heavier than water?

"A Gem which should be in every Home."—That is how a Kew reader describes THE COUNTRY-SIDE.

Additions to the Natural History Museum.

The Life of an Eel—The Cod's diet—A Persian greyhound—The skeleton of "Arctic King."

By R. Lydekker.

IN an earlier note reference has already been made to the installation in the entrance hall of a case illustrative of the work of the Marine Biological Association at Plymouth. Since that notice was penned considerable additions have been made to the series; one of the most noteworthy of these being a spirit preparation to show the young stages in the life of the eel.

Most of my readers are probably acquainted with the fact that eels breed in the sea, and that the young are transparent, slab-sided creatures, with very deep bodies and ridiculously small heads.

Of these leptocephali, as they are called, five specimens of different ages are exhibited in order to show the gradual elimination in the excessive depth of the body as development proceeds. When ready to enter freshwater the leptocephalus, or fry, completely discards its original goblin-like form, and, under the guise of the "glass-eel," assumes a semblance of its permanent shape, although still more or less translucent. When the glass-eel stage passes into that of the elver the creature is to all intents and purposes an eel, and forthwith proceeds to make its way up some river to its future inland home.

An excellent and instructive example of nature-teaching of the very best type is presented by an adjacent vessel, in which are displayed examples of the various kinds of fishes and invertebrates constituting the ordinary diet of the cod. Thirteen distinct species are included in the cod's menu, comprising five kinds of fishes (for the most part immature) and as many of crabs, together with young lobsters, shrimps, hermit-crabs in whelk shells, whelks, and sea-mice.

The percentages of cod in which each particular description of food is found are likewise indicated. Although in many cases they would be impossible, there are numerous other kinds of animals in which analogous exhibits of the food supply would form an interesting addition to the galleries.

If the visitor will extend his walk from the centre of the entrance hall to the adjacent north hall, he will scarcely fail to notice a very handsome addition to the collection of dogs in the shape of a Persian greyhound, or "gazelle-hound," presented by the Hon. Florence Amherst. The specimen is placed next a fine pair of the nearly allied but larger Afghan greyhound, characterised also by the greater length of the hair on the ears and limbs.

As their second name implies, Persian greyhounds are employed in the East to chase gazelles and antelopes, in conjunction with hawks or eagles trained to fly at the head of the quarry and retard its speed. If the game escape, the hounds have a nasty habit of turning on their owners.

"Doggy" people should likewise find much to interest them in the skeleton of the Eskimo dog, "Arctic King," who was absolutely the finest specimen of the breed in England, and who won for his owner, Mr. A. P. King, over 120 special and first prizes, to say nothing of minor awards. Although this peerless dog died nearly two years ago, his skeleton has only just been presented to the museum.

To Secure or Let Apartments for Easter, Advertise in our Sale and Exchange Columns.

"DAILY by MAIL"
The Naturalist's Daily Newspaper.

Amateur Photography.

ON MAKING AND TONING BROMIDE PRINTS.

By ANTHONY J. PRESTON.

BROMIDE printing is really one of the easiest known methods of producing pictures. Not only so, but it possesses many advantages over printing out paper and kindred processes.

For instance, you have more control over your print, you have the choice of almost any tone, from the original black and white to bright red or green, you have at your disposal numerous surfaces, such as glossy, matte, smooth, rough, white, or tinted, and on each you can obtain the most exquisite prints and produce at your pleasure a contrasted black, white, or a soft grey image by development alone, while by subsequent toning methods you have command of a fine variety of tones—brown, sepia, red, blue, and green.

But first—a warning. Do not try all these different papers at first, get one paper—almost any will do—but for preference get a platino matte surfaced paper and master its peculiarities; get to know from experience how to produce a good print on one kind of paper and the rest will be quite easy. Further, make sure that you can turn out a good print by simple development before you try to obtain any of the exquisite toned images. Toning a bad print will only, as a rule, make it look worse, and this is the road to disappointment and failure.

Now as to the method of working, first get everything ready, and don't forget that cleanliness is before everything. Have a clean dish for developing and another which should be larger than the size of paper you are using for the fixing bath.

Preparations.

See that your ruby lamp is in order and in its place, as, of course, the work has to be done in the dark-room, and also that you have some light source for exposing. Daylight is too intense and generally unmanageable. If you are a luxurious person and have gas laid on in your dark-room, get an incandescent burner with a by-pass fitted. With the exception of the incandescent electric light, which is ideal, the incandescent gas light is the best I know of for all-round work.

An ordinary fish-tail burner will do, of course, and these may be obtained now from photographic dealers fitted with a by-pass, which is an advantage. If you have no gas, you need not despair; you can expose bromide paper with almost any light, even a candle, the only trouble is, you have to light it and put it out for every exposure, and the exposure itself will need to be longer.

Having selected the position for the light, mark off on the bench, or wall, or whatever else possible the following distances:—One foot eighteen inches, two feet, and two feet six inches. The marks must measure these distances from the light. Now make up the solutions. First, the fixing bath, which should preferably be acid, the following is a good formula and one which I have used for years:—**Hypo**, 2 ounces; metabisulphite of potash, 1 ounce; water to 1 pint. The metabisulphite renders the bath just sufficiently

acid and is less trouble than the usual sodium sulphite and sulphuric formula.

The next thing is the developer. Metol-quinol is as good as any for general work and should be used just half as strong as is usual for negatives. The following formula is an excellent one and gives very brilliant results:—No. 1—Metol, 100 grains; hydrokinone, 50 grains; soda sulphite, 2 ounces; potash bromide, 60 grains; water to 2 pints. No. 2—Sodium carbonate (crystals), 1 ounce; water to 2 pints. For use take equal parts of each.

Printing and Developing.

Now take your negative, carefully wipe all smears and marks from the back, and place it in the printing frame, turn out the light, and take a piece of bromide paper and put this in contact with the negative, film to film.

The film side of bromide paper will soon be easily recognised, the paper has a slight tendency to curl up with the film inside. There is also a noticeable difference in the texture of the back and front. The back feels slightly rough—due to the grain of the paper—the front is quite smooth—due to the layer of gelatine which covers it.

When the back of the printing frame is closed, turn up the light and make the exposure by holding the frame at, say, the eighteen inch mark from the light. The exposure necessary must be arrived at by practice. This is the only real difficulty connected with bromide printing, and this is soon overcome by experience. Some guide is given in the instructions issued with the paper. This is usually given as so many seconds at so many inches from a fish-tail burner with a negative of average density.

If you are using an incandescent electric or gas burner the exposure will be rather less; if you are using a paraffin lamp or a candle the exposure will necessarily be more. No definite rule can be laid down, as not only do light intensities and the density of negatives vary, but some makes of bromide paper print quicker than others; in other words, some makes are more sensitive than others.

As a general rule short exposures tend to give grey tones and long exposures produce black. It will be observed therefore that by modifying the exposure you are able to obtain either a grey (suitable for architecture, etc.) or a black (suitable for almost any subject).

Having then exposed the paper, remove it (by the light of the ruby lamp, of course) from the printing frame and place it film side uppermost in the developing dish. With one sweep, pour the developer all over it. The quantity of developer required depends on the size of the dish you are using. Use plenty, but do not waste.

In a few seconds the image begins to show, and in about three to five minutes will have fully developed up, that is if the exposure has been fairly correct. If it takes longer the paper is under-exposed; if, on the other hand, it comes up very quickly and rapidly blackens over-exposure is indicated.

It is not much use trying to remedy errors of exposure by modifying the developer, the only thing to do is to make another print. It is just as well, however, to fix the faulty print—just a few minutes' immersion in the hypo will do for the purpose—and examine it in a good light. In cases of under-exposure it will be noticed that the print has a greyish appearance and lacks detail, especially in the high lights, i.e., those portions of the print corresponding to the denser portions of the negative.

In cases of over-exposure the image will be black, or if greatly over-exposed a greenish black colour will be noticed. The shadows will appear dense and blocked up, and the whites will be dull and lustreless.

The remedy is, of course, obvious. The paper must have a longer or shorter exposure than was first given. If the negative is very dense it is better to expose nearer the light, say, at the one foot mark; if, on the other hand, the negative is thin, exposure should be made at a greater distance from the light.

Other Hints.

Bear in mind that the further the negative is from the light the longer the exposure will have to be and *vice versa*. When the correct exposure has been found make a note of it for future reference thus: Negative No. 10, 15 seconds at 18 inches incandescent gas; Wellington platino matte. Do not omit to do this, it saves any amount of time when repeat prints are wanted; moreover, it is some guidance for other negatives.

When developed the paper is transferred at once to the fixing bath, washing between development and fixation being unnecessary when using the acid fixing bath recommended in this article. About ten or fifteen minutes must be allowed for fixing, at the expiration of which interval the paper is removed and set to wash. Washing takes about half an hour in running water, or twice that time in frequent changes.

When the prints are washed sufficiently they are hung up by sticking a pin through one corner and fastening to the edge of a shelf or some other projecting woodwork where they do not come in contact with anything. When dry the prints may be trimmed and mounted or put on one side for toning.

This is the whole process of bromide printing, and I am sure you cannot call it difficult. Providing the directions given here are followed there is no reason why any person with sufficient intelligence to work P.O.P. should not turn out very pleasing pictures.

Our Photo. Competition.

TWELVE GUINEAS IN PRIZES.

Photographs intended for the March competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MARCH 9, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them.

All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Goldfish Breeding in Aquaria.

A PLEASANT AND PROFITABLE HOBBY.

By the Rev. G. C. BATEMAN, Author of "Fresh Water Aquaria," &c.

GOLDFISH may be easily bred both in aquaria and small ponds, and when thus reared in cold water are much hardier, and, as a rule, better coloured than those which have been raised in warm water.

The fish for breeding purposes should be three or four years old, though they have been known to reproduce their species when less than a year in age. Should the females be larger than the males there ought to be four of the latter to three of the former. When all the fish are of the same size, or nearly so, the sexes may be in equal numbers. It goes without saying that the parent fish must be quite healthy, of a good colour and fairly tame.

The males and the females cannot be distinguished from each other by inspection, except during the breeding season and when in breeding condition. Dealers in goldfish frequently tell their customers that the sexes of the fish are known by the shape of their fins. This, however, is a delusion. The fins of goldfish are somewhat liable to vary in shape, but this is no indication of sex.

In the spring, if the male fish be in breeding condition he can be readily recognised by little excrescences or lumps on the outsides of his gill-covers, which can be easily seen on close inspection, or felt with the fingers. The females, perhaps, never possess these tubercles when fit to breed, though they might do so under the same circumstances that the female pheasant adopts the plumage of the male. The female goldfish may be known frequently by the greater size and fulness of the lower part of their body, in comparison with that of the males. Of course, the sexes, when once ascertained, if they have no special distinguishing colourings, can be marked, from time to time, by snipping off a little piece of a fin, in order that there may be no hesitation in sorting them in the future.

The aquarium for breeding purposes should be as large as possible, though these fish will sometimes spawn in a small one. A tank three feet long, two broad and a foot or eighteen inches deep will be quite large enough. A smaller one would certainly do, but not so well. It should be placed, if possible, near a north window and in a fairly quiet situation. It should also be properly arranged, and its inmates regularly cared for. If balanced, that is, containing such a sufficient number of growing plants that the oxygen produced by them, together with that absorbed from the atmosphere by the water, is enough always for the wants of the fish, the water need not be changed at all. A little fresh, however, will have to be added, from time to time, to make up for the loss through evaporation.

When the tank is not balanced, owing to either a lack of growing plants or too many fish for its size and condition, the water should be drawn off, when it is seen to be necessary, by the help of a small syphon, to within about four inches of the bottom and fresh and clean water syphoned in to take its place.

The bottom of the tank ought to be covered, to the depth of at least three inches, with well-washed coarse sand, and over this sand there should be a layer of fine gravel. In the sand useful weeds should be planted. The more suitable plants for this purpose are:—The Italian water weed, *Vallisneria spiralis*, either the male or female, or both. (It is somewhat difficult to get this to grow

successfully in quite cold water.) The Canadian water weed, *Anacharis alsinistrum*. (This is a beautiful and useful plant, but care should be taken lest it get into some pond or stream, where it may quickly become a nuisance, owing to its exceedingly vigorous growth.) The close-leaved pond weed (*Potamogeton densum*) and the willow moss (*Fontinalis antipyretica*).

The fish must be fed regularly every day on suitable food, and in a suitable quantity, that is, always plenty, but never too much. The food may consist of "ants' eggs," pieces of raw or cooked meat, cut in short narrow lengths, pieces of garden worms (the worms first killed by being dashed down on the ground), flies, powdered biscuit, powdered oven-dried bread, crushed vermicelli, water worm (*Tubifex rivulorum*), larvæ of various aquatic animals, and the like.

If at any time discarded food be observed at the bottom of the tank it can easily be removed by means of a glass tube, the top being covered by a thumb (or finger) while the lower end is held immediately over the substance to be withdrawn. When the thumb is lifted up the substance will shoot up into the tube and will stop there until taken from the tank, if the thumb be replaced at once in its former position.

About April, supposing the right fish have been procured and properly cared for, signs of breeding will be noticed in their extra liveliness. The spawning generally takes place early in the day. The female about to spawn will rush into the thickest part of the weeds, followed by one or two of the males, and as she discharges her eggs they will at once be fertilized by the males. The eggs, being covered with a sticky secretion, will adhere to the weeds as they come in contact with them. As the fish will quickly begin to eat their eggs, they, or the eggs, must be removed at once to other quarters. The better plan is to put the fish into another aquarium, which should be at hand prepared to receive them. If there is no aquarium ready, some wide-mouthed gallon or half-gallon glass jars should be filled three-quarters full with pure water of exactly the same temperature as that in the tank. Then the portions of weeds upon which the eggs are seen are cut off with a pair of scissors and placed in the jars, and the jars themselves put in a sunny window. Care ought to be taken not to over-crowd the jars with eggs; there should be about fifty to each gallon of water.

The young fish will appear in from five to eight days, according to the temperature of the water. It is interesting and instructive to watch the development of the young fish within the egg by means of the magnifying glass. The bad eggs can be easily recognised by their opaqueness and bluish-white colour, and should be removed. A pair of ordinary glove-stretchers will be found useful for this purpose.

For about the first twenty-four hours of its life each young fish will subsist upon the contents of the yolk-sac attached to the under part of its body. When this has been absorbed, the youngsters must be provided with suitable food given regularly. This food may consist of entomostraca (water fleas and the like), which can, generally, be easily obtained from some small and shallow pond.

A large bottle is placed on the ground close to a pool or pond in the waters of which the desired creatures are seen to be. A tin can, holding about a pint, tied to the end of a long stick, is filled with water holding many entomostraca, and is emptied into the big bottle. This contains a syphon and funnel (which is raised about three inches). When the bottle is full the syphon is set running and kept running, by means of the little can, until sufficient animals have been obtained. The mouth of the funnel is covered with muslin.

After these animalculæ have been carried home, a little of the water containing them is syphoned into the jars, in which are the young fish. The smallest of the crustaceans will be eaten first and the bigger ones will continue to live, and perhaps breed, until the fish are large enough to swallow them.

The fish ought to be removed, as they grow, to larger vessels until they are able to eat crushed biscuit, dropped upon the surface of the water, and such animals as the water worm and the "red-wrigglers" (larvæ of certain of the gnats) found in water butts and similar places.

The young fish should never be crowded, and when removed to larger aquaria the water therein must be of exactly the same temperature as that from which they have been taken. They ought not to be poured into their new home, but the jars or vessels containing them should be sunk in the water of the tank and then the young fish, unfrightened, will swim out at their own convenience.

If it is convenient to remove the parent fish from the tank in which they spawned to one similar, it is wise to do so, and thus leave the eggs behind. The old fish will be ready to spawn again in about three weeks' time.

As some of the fry will grow much more quickly than others they should occasionally be sorted according to size. And as they grow they ought to be thinned in numbers.

When the fry are about three weeks old the shallow tanks in which they live should be provided with healthy growing weeds, which will not only supply oxygen, but also shade and make hiding places for the little fish.

The young fish ought not to be placed with the old fish until the former are quite able to take care of themselves.

The secret of success is regular and wise attention, no unnecessary interference, and no crowding.



THESE three pictures represent different stages of the occupation, last year, of a nesting-box of the same pattern as those which are now being supplied to many readers of THE COUNTRY-SIDE. It was, indeed, of a size suited to larger birds; but the pair of great tits managed to retain undisturbed possession until their brood was fledged, after which a pair of starlings occupied the box and also reared a brood.

The first picture shows the nest with its full clutch of six eggs. The second shows the eggs hatching, one chick having completely emerged and another just coming out. The lowest picture was taken when two of the six young had already left the nest.

On each occasion the box was taken down and placed in the sunlight for the purpose of a rapid photograph; and for the first two operations the mother bird had to be lifted off the nest, a proceeding which she resented by angrily pecking the fingers that held her. On all these occasions, both parents kept up an incessant scolding until the box was replaced. Then one of them promptly popped in to see that all was right.

Although one does not often like to disturb the little nursery to this extent, it is not easy to exaggerate the pleasure which a daily round of a number of occupied boxes gives. The parents soon become accustomed to your visits, and may even be taught to take food from the hand without leaving the eggs.

These, however, are pleasures to come. Just now is the time for considering which are the most eligible sites that you can offer to your future tenants. And with regard to this I will repeat the advice given before—because it is all-important: do not put up the boxes in any position where a climbing animal can get at them. To put a box among the small branches of a bush is to court almost certain failure. The birds recognise the danger of the position as a rule, and leave the box severely alone. Sometimes they are foolish enough to occupy it, with the usual result of eggs sucked or young killed by mice or rats, cats or weasels. A bare tree-trunk, a wall, or any other situation where your common sense tells you that neither weasels, cats, rats, nor mice can reach the hole—is the proper place for the nesting-box.

Birds have not our human notions about seclusion or privacy in a dwelling site. Safety is what their inherited instinct leans to; and, provided that this seems assured, tits will readily take possession of the inside of a pump in constant use in the middle of a yard or a letter-box in a roadside wall, which is opened by the postman twice a day.

In the matter of a pump, I have known a pair of tits, whose beginning of a nest was pumped out with the water several

times a day, to continue to put in fresh material during every day for three weeks. The reason for their persistence in the face of such discouragement is, of course, that no such things as pumps and civilized human beings who need frequent daily supplies of water existed at the time when the instincts of the tits were being formed.

The kind of site which their nature bids them to select is one which is safe against prowling enemies. One ideal site is a deep hole in any solitary stump, with a narrow entrance. Hence their predilection for pumps.

Another ideal site would be a hole of the same kind in any tree-trunk or rock with a bare surface. Snakes cannot climb up such places. Rats, mice, weasels, cats, etc., very rarely ascend them; and the little tits themselves are the only birds which can negotiate the very small entrance. For this reason it is always mistaken kindness to put a perch just outside the entrance of a nesting-box. Birds which are accustomed to go in and out of holes do not need it, and it only gives larger birds the opportunity to annoy and perhaps kill the little occupants. It also enables cats, etc., to locate the position of the hole.

No doubt there are many persons who would like to have birds nesting by their houses, but who have no sites in their small gardens which cannot be reached by cats. For use in such places designs were given and illustrated in No. 25 of THE COUNTRY-SIDE, of means by which the cats may successfully be circumvented.

For the protection of a nest-box placed against a garden wall all that is needed is a sloping roof above it. This must slope at an angle too steep for cats to rest comfortably upon it, and, on the side where the entrance to the nest-box is, it must project far enough to prevent the cat from reaching over to the entrance.

If, on the other hand, it is preferred to have a nest-box in the open, away from the wall, all that is necessary is a post or tree-trunk on which the box may be fixed about eight feet from the ground, and below it a broad sheet of zinc fixed round the post or trunk. Upon this the claws of a climbing cat get no foothold; and the birds quickly discover that no cat ever ascends it.

Having provided for the birds this first essential quality of safety in the site which you offer them, you may consider their comfort; and the most important condition of this is shelter from driving rain. If possible, therefore, the box should be placed among trees; or, if no such natural shelter is available, a sloping roof may be provided to keep off the rain. As a general rule, too, a north aspect is best for exposed boxes, because least rain comes from that direction and they are also then protected from the direct rays of the sun. If, however, the site is naturally sheltered, then either the east—which gets the morning sun only—or the south—whence the air is warmest—may be the best aspect.

One very common mistake is to put up a nest-box in close proximity to the bird-table; a manifestly unsuitable position, because the bird-table is almost always a scene of strife, whereas what the birds need in a nesting-site is peace and quiet.



Photos.]

[G. B. Norriss.]

A Great Tit's Nursery.

- 1.—The Eggs.
- 2.—The Eggs Hatching.
- 3.—The Fledged Young.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page 7), cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Nest-boxes in Verandah.—There is no reason why nest-boxes in a verandah should not be occupied, provided that the position is otherwise suitable. Safety from cats, rats, mice, etc., and shelter from driving rain are what the birds want.—(to Miss BROOKE.)

Red-crested Pochard.—Yes, this bird, also known as the red-crested whistling duck, *Netta rufina*, is only an occasional visitor to Britain. About five and twenty specimens have been recorded. Are you sure of the identity of your bird?—(to H. CROSS.)

The Starling's Bill.—No; the difference in the colour of starlings' bills in February—some being blackish and some yellow—is not a matter of sex. Both sexes have yellow beaks in the breeding season, but the young birds of last year have not acquired them yet.—(to H. CROSS.)

Sick Goldfinch.—The goldfinch that "makes a wheezing noise, and breathes fast with its beak open" should be given five drops each of syrup of squills, ipecac. wine, chlorodyne, and glycerine in its drinking water, all shaken together. Also give a small piece of bread dipped in milk and four or five drops of cod liver oil dropped about it every second day until better. Add a little thistle and teazle seed to its food, and see that its cage is kept quite free from draughts, and not hung above a lamp or gas jet when lighted.—(to A. G. HUNTLEY, Darlington.)

Linnet III.—Give the bird the same medicine as recommended for "Ailing Bullfinch" below, every third day for a fortnight, and on alternate days give a spray of greenstuff and a small piece of bread dipped in hot milk and sprinkled with maw seed. The condition of its feathers is probably caused by red mite. Carefully examine its cage, probing any cracks or joints with a pin, and you will doubtless find hordes of these insect pests. Exterminate these, clean the cage thoroughly, and give the bird a bath every day.—(to J. W. MARR, Walsall.)

Ailing Bullfinch.—The bird's digestion is probably out of order. Dissolve as much Epsom salts and ditto of chlorate of potash as will cover a sixpence in its drinking water, and add six drops of lemon juice. Give this for one day three times in a week. Feed on a mixture of two parts canary, one part rape, one part hemp, and one of sunflower seeds, and give green food daily. Clippings of fruit trees are excellent for them. Catch the bird and bathe the foot for a minute or two in a warm solution of boracic acid, and wipe dry on a soft rag. With regard to your second question the mallard is certainly the wild duck, but there is no reason why two different names should be applied to the sexes of one species even though it is customary to use distinctive words popularly.—(to S. CARROLL BENNES, North Berwick.)

Swans and their Young.—Swans drive away their young in autumn in obedience to a life-saving instinct; because they are birds which need a considerable grazing area to themselves, and if the young remained all might starve. Black swans acquired their instinct in the southern hemisphere where the seasons are reversed; therefore in Britain they ordin-

arily nest in mid-winter and drive away their young before midsummer—of course, not understanding the meaning of their actions.—(to "PERIPATETICUS.")

Male birds that Sit.—As a rule the male of those birds in which there is a very marked difference in the plumage of the sexes do not take part in incubating the eggs. They would be too conspicuous on the nest. As a rule, too, such birds—e.g., the pheasant and mallard—are more or less polygamous. A brightly coloured breast in the male—e.g., bullfinch, linnet, yellowhammer—is no bar to the male's sitting; because the breast is hidden in the nest.—(to "PERIPATETICUS.")

Roots of the Ivy.—The question is whether the true roots which the climbing ivy thrusts into damp places between stones, etc., are entirely different from or merely modifications of the aerial roots by which it clings. I think that the weight of scientific evidence is on the side of the latter view, especially as experiments appear to show that the ivy is always able to take some nourishment through these aerial roots.—(to Miss V. SLADE, B.E.N.A.)

Garden Aviary.—We know of no book on the subject. Last week and this week we have published notes upon the subject in the "Cage Birds" section.—(to J. R. COOK, Bishops Stortford.)

Squirrels and Conifers.—The squirrels are certainly the cause of the ground under spruce trees being littered with bitten-off twigs. The squirrels appear to eat a minute portion of the inner wood, especially in early spring when the sap begins to move.—(to R. JEFFERSON JONES.)

Fancy Mice.—For the keeping of fancy mice we advise a roomy box-cage in preference to the small wheel-cage. The continual turning of the wheel is unnatural and conducive to sore feet. The staple food should be stale bread and milk given daily, also oats, canary seed and wheat. A piece of raw carrot at intervals is appreciated. Use saw-dust with a little bran for the runs and fresh hay and a little wadding for the bedding. Keep feeding utensils and house scrupulously clean.—(to W. WALKER, Bromley, Kent.)

Growth on Tortoise.—We are unable for certain to say what has caused the "pebbly growths" which have appeared on the legs of your tortoise, but we should not be surprised if they turn out to be parasites. We have repeatedly found these creatures on the legs of tortoises, they are somewhat oval in shape and very hard, remaining in one place for a considerable time and grow, sometimes to the size of a pea; they bore into the skin of the tortoise and thus get their sustenance. So tight do they cling that we have found it necessary to use tweezers to dislodge them. Your management and feeding is correct, and this is borne out by the length of time you have had the tortoise, twelve years.—(to Miss CAROLINE M. JONES, Bedford.)

Keeping a Squirrel.—We do not advise you to try and hand rear a squirrel, it very rarely succeeds. The better plan is to take the young squirrel from the nest and let it be suckled by a cat that has recently had kittens. When it starts to feed itself, give bread and milk and crack its nuts for it. When full grown the food should consist of bread and milk, acorns, nuts (except the oily ones, such as Brazils), plain biscuits, and a raw egg at long intervals; let it have access to a little water. Keep in a roomy cage, but if kept in a small one see that it gets a run in the room for a short time daily. Squirrels rarely live long in confinement, insufficient exercise being an important factor in causing their early death. They love warmth in their sleeping quarters. Give fine hay for bedding and keep free from draughts. The run of the cage should be sprinkled with sawdust or fine sand. They are liable to vermin, therefore the bedding should be often changed and great cleanliness observed generally.—(to W. N. JUPE, Reigate Hill.)

B.E.N.A.

(British Empire Naturalists' Association.)

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose id. stamps.

Application to Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

All applications should be addressed to the local secretary of the district, or to Miss G. B. NORREYS, Warham, Wells, Norfolk.

Local Secretaries.—Will all Local Hon. Secretaries now at work kindly notify the corrections and additions to the first list of members up-to-date to the Organising Hon. Secretary, Mr. J. W. Mercer, 611 (not 111 as previously printed), Chorley Old Road, Bolton?

Will all members who are willing to act as local hon. secretaries in districts not yet provided with such also kindly communicate with him?

Microscopy.—Will any member who is a microscopist and has leisure, undertake to act as Hon. Secretary of a Members' Exchange of Specimens for mounting? The inquiry is made by request.

Free Gift of Papers.—The Hon. M. Cordelia Leigh, 32, Chester Street, S.W., would be happy to send a parcel of odd numbers of The Transactions of the Royal Astronomical Society, or of the Royal Entomological Society, to anyone to whom they may be of use, on payment of carriage.

Free Distribution of Seeds.—COWSLIP seeds will be sent to any members desiring them, on receipt of a stamped, addressed envelope by Mr. J. J. Towns, Holbeach, S. Lincs.

Affiliated Societies, etc.—YOUNG NATURALISTS' CLUB, with headquarters hitherto at North Shields, is now at 2, Oxford Street, Tynemouth. Mr. R. King is the secretary.

Schools Mutual Aid.—On January 26th was published a letter from the head-master of the Gloucester Road School, Peckham, showing how useful and interesting had been the natural history specimens, etc., sent from its linked school at Stoneleigh in Warwickshire. Below is a corresponding letter from the head-master of the Stoneleigh School, showing how valuable had been the return made by the Peckham School. We do not expect to work miracles, but the Hon. Cordelia Leigh has every reason to be pleased with the way in which she has inaugurated this scheme for us:—"I am pleased to say the Mutual Aid Scheme, which you kindly initiated between the Peckham School and ours, is working very successfully, and has awakened an even greater interest amongst the children than I think we at first anticipated. We have sent a couple of parcels of specimens which the children collected themselves, by their own observation, gaining knowledge which was afterwards supplemented by lessons at school. Mr. Chase, of the Gloucester Road School, has remarked how pleased he was with them, but it is, of course, of the usefulness of things sent to us that I can say most. In a school like this— from the children's point of view, remote from a town—and where, although happily there is no poverty, wages are too low to admit of money being expended in periodicals, except, perhaps, a local weekly paper, the value of a parcel of magazines such as we received at Christmas must be apparent. Some of the things, as drawings, pictures, etc., will be most useful in school, but it is in and through the homes of the children that the scheme will be of the greatest service. The magazines do so much to encourage home reading. I find, in many instances, children and parents have read the books through, and then exchanged them with others. I am sure we are grateful to you for founding the scheme.—William H. Wells, headmaster, Stoneleigh C.C. School, near Kenilworth.



The Garden.

Work for the Week.

Kitchen Garden.

HERE is now such a great deal to be done in this department that fine open weather is earnestly to be desired. Should the soil be wet, seed-sowing, however important, must be deferred, it being far better to wait than to sow seeds when the conditions are plainly unsuitable. There is a great difference in soils in this respect, for whilst with some a few hours' rain renders outdoor work impossible for several days, even after a long-continued downpour a light and well-drained soil is quite workable after but a few hours' rest. The worker of a heavy garden soil may thus be much inconvenienced at this season of the year, but then he has all the best of it in times of drought.

Seed Sowing.

Replace all early sowings that have failed. Almost every kind of seed may now be sown, but as an aid to the memory it will be as well to give a detailed list. **BROAD BEANS.**—Sow the main crop. **BEET** may now be sown for the earliest supply. **BRUSSELS SPROUTS** to be sown for the main crop late in the month. **CABBAGE.**—Quick growing varieties to be sown for the summer supply. **CARROTS** to be sown about the middle of the month. **CELERY** and **CELERIAC** to be under glass or upon a hotbed. **LEEKs** to be sown in very rich, well-prepared soil. **LETTUCE** to be planted out and sown in quantity. **ONION.**—Sow the main crop on a carefully-prepared bed. **PARSLEY** to be sown. We recommend this for use as an edging. **PARSNIP.**—Sow the main crop in drills 18 inches apart. **PEAS.**—Make extensive sowings of main crop sorts. **POTATOES.**—Get the early sorts planted as soon as possible. **RADISHES** to be sown for succession. **SPINACH.**—Sow the perpetual variety. **TURNIPS.**—Sow seeds of an early variety. Remember that the rotation or alternation of crops is of the greatest importance in the kitchen garden. Prepare all seed-beds very thoroughly. Sow always in drills in preference to broadcasting, keep a sharp lookout for slugs and other garden foes, and do not commit the general mistake of sowing small seeds too thickly.

Fruit Garden.

Train and nail trees on walls, and see to it that protection from frost during the blooming period will be ready for use when

required later. This may consist of nets, thin canvas, spruce branches, straw screens, etc. Should planting still be in progress, care will be needed lest the trees suffer from exposure of their roots. These must only be out of the soil for absolutely as brief a period as is possible. The roots of bought trees should be dipped in water as soon as received, and again before planting.

A difference of opinion exists concerning the treatment of fruit trees in the matter of pruning after planting. Some gardeners do not use the knife for a season after transplanting; we favour an immediate shortening of the branches.

Now is a good time to plant straw-

To Make a Hotbed.

In the well-ordered garden, where glass-house accommodation does not exist or is strictly limited, a hotbed is a necessity. If immediately prepared its uses will be considerable, and will advance the summer glories of the garden most noticeably. In the first place, secure a good bulk of stable manure, and, if they are available, mix with it an equal quantity of decaying leaves. If the manure is long and rank, turn the heap two or three times at intervals of two days. If it is too dry, sprinkle with water, allowing the superfluous heat to steam away out of it. Next make it up into a square heap, not less than three feet in depth and sufficiently large to allow a margin all round the outside of the frame, but little treading or beating being required. After the frames are in their places put six inches depth of light soil, and is there is any danger of the generation of too great a heat, allow a few days to elapse before sowing seeds or introducing plants. It is advisable to provide a little ventilation; night and day, for a while after the bed has been made up.



Photo.]

[J. C. Varty Smith.

The Meadow Rue.

Thalictrum aquilegifolium.

berries. Runners can be purchased cheaply, and if afforded good treatment they will bear a light crop this year. Royal Sovereign has not yet been superseded as the champion all-round sort. A great part of the art of successful strawberry growing consists in keeping the surface soil in prime condition. To allow weeds to grow unchecked among growing crops is always a costly business in the end.

ALTHOUGH their flowers are not very showy, added to their hardy qualities, the finely-cut fern-like foliage of several of the *Thalictrums* renders them valuable plants for the garden. The genus comprises about 30 species of hardy herbs. Nearly all of them are natives of the north temperate region, three species being indigenous to this country.

The example illustrated, *T. aquilegifolium*, the columbine-leaved meadow rue, grows about four feet high. Flowering from May to July, it has white flowers, usually with purple stamens. The variety *atropurpureum* has dark purplish stems and leaves. Other commendable species include *T. anemoides*, very dwarf in habit, with white flowers; *T. tuberosum*, with yellowish-coloured flowers borne in great abundance; and *T. minus*. They are easy of cultivation, thriving in a border in ordinary soil, and are also excellent subjects for naturalising. We have seen very effective beds in May formed of a *Thalictrum*, such as that illustrated, and Shirley poppies, the two going well together, without interfering with each other's requirements.

Meadow Rue.

A Valuable Plant for Foliage Effects.

The Garden.

Asparagus Growing.

HINTS AND WARNINGS.

THE really enthusiastic gardener delights in growing the best of the best, and in gardens where that excellent department the kitchen garden performs holds premier place there are few more satisfactory possessions than a really creditable plantation of asparagus. As towards the end of March is the right time both for sowing seed and for planting, it is high time that a start was made in preparing for a bed should its possession have been resolved upon. Indeed, both for the seed and permanent bed a piece of land that has been well manured and deeply-dug early in the winter is greatly to be preferred.

Whilst the ideal soil for asparagus is a good deep sandy loam with a porous subsoil, by good cultivation satisfactory asparagus can readily be raised on any but a cold and heavy clay, in which case so much soil preparation is requisite that its culture can hardly be recommended. Remembering that earliness is especially desirable with asparagus, the warmest position in the garden should be given up to the bed, a full southern aspect being preferable.

Having selected a site, if this has not already been done, preparation of the ground by deep digging or trenching and by the application of well-rotted manure must be energetically proceeded with. If the soil is already in good order it should be lightly forked over, and left for the weeds to germinate and be destroyed. This operation to be repeated later. An abundance of weeds is so fatal to the production of good asparagus that it would be better to defer operations a whole year rather than sow or plant upon land that was known to be badly infested by perennial weeds.

As sowing in permanent beds is not to be recommended, the choice of method lies between the sowing of a bed to provide plants to fill a permanent bed a year later, and the more expeditious method of planting bought plants. Further details will appear later.

Carnation Culture.

A PLEASURE FOR THOSE WITH GREENHOUSES.

WINTER-FLOWERING carnations are so pleasurable that we commend their culture to all possessors of suitable glasshouses. Whilst it is true that their cultivation demands a good deal of attention, it is nevertheless surprising that so many gardeners are unsuccessful with these plants. The giving of too much heat is a very common mistake. A commencement is usually

Have You Anything to Sell?
 Try our
Sale and Exchange Columns.
 See Back Cover.

made by means of bought plants, and as they are now being offered for sale by a few English dealers we would suggest that a trial should be made of some of the newer American varieties, of which such wonderful accounts are to hand.

Once a stock has been obtained it is increased by means of cuttings. The best are afforded by side-growths three or four inches long, and now is the time to take them. Prepare the cuttings for insertion as with chrysanthemums, remembering to handle them very carefully. Some growers also make a cut half-an-inch long from the base up through the centre of the stem, then dipping the cutting, with the incision held open, in silver sand.

Cuttings may best be struck seven or eight round the side of a well crocked 4½ inch pot, in a small frame, or under a handlight placed either in a cool house or on a stage over hot-water pipes. Moisture is what is chiefly to be guarded against, and a little air must be afforded daily.

The compost to root carnation cuttings in should consist of a very sandy loam, with the addition of a little leaf soil, and it must be made very firm. As soon as the cuttings are rooted they should be placed in a cool house near the glass, to be potted off singly in thumb pots in slightly richer soil a few days later. Once established, they must be given plenty of air, and to make good plants they will require intelligent watering.

G. T.

Seed Sowing.

THE sowing of the seeds of hardy trees and shrubs should now be done by those who mean to increase their stock in this manner. Most seeds germinate best in loam, but there are a few, chiefly of the heath family, which must have peat. The soil should be sifted through a quarter-inch sieve, and have about one-fourth its volume of sand well mixed with it, in order to keep the soil light and open. The pots used should not be large; the size known as the large sixty is suitable for most purposes.

They should be half filled with small crocks, and filled up with soil to within half-an-inch of the top, and very slightly firmed. The seeds are then spread over this, gently pressed in, and generally covered with about their own depth of soil; small seeds, such as those of rhododendrons, need not be covered. Such fruits as thorns, roses, hollies, barberries, plums, and cotoneasters should be buried in sand for a month or two; this causes the fleshy covering to rot and soften the hard shells of the seeds.

Even then, such seeds may lie a year or two before they germinate, and there is no doubt that they are often thrown away before they have had time to start, in the belief that they are dead. Other seeds should be kept in a frame when there is danger of frost, and protected from cold at night.

The seedlings may be exposed to the sun and air during the summer and autumn.

but it is worth while to protect them from frost in winter until they have passed their second season, after which they may be transplanted into nursery beds.

Some things, however, grow so rapidly, such as oaks, chestnuts, plums and aucubas, that they will require to be transplanted earlier than this. The point is that by affording babies of really hardy trees and shrubs a little protection from cold, and giving them generous treatment, they make a healthier start, and gain as much as a year on those not so assisted.

J. G.

The Rabbit Pest.

FORESTERS, farmers, and gardeners have reason for their strong protest against the cultivation of the wild rabbit in this country. We have no more destructive animal than "dear little brown bunny," and it is so difficult to control him that his extermination from the field, wood, hedgerow, and park has become a necessity, if our efforts to turn the land to the best account are not to be frustrated.

Rabbits devour young trees as a cow eats turnips. If they could be confined in warrens there would not be any objection to them, but experience has proved that they burrow under or climb over fences that are called rabbit-proof; they swim rivers and streams like rats, and they multiply at an alarming rate.

There is a demand now for the proclamation of the rabbit as a verminous pest to be destroyed wherever seen, in the same manner as rats are destroyed.

The landowner who protects rabbits or forbids their destruction at any time should be proceeded against for harbouring a public nuisance. Authorities on forestry say that it is useless to talk about planting trees to grow for profit if rabbits are to be allowed the freedom they now enjoy.

The Umbrella Pine.

THERE are two quite different trees known as umbrella pines. One a true pine, *Pinus pinea*, also known as the Stone Pine; the other being *Sciadopitys verticillata*, which is more closely allied to the Cypress tribe.

The latter was discovered in Japan about sixty years ago, but it was not introduced into Europe till twenty years later. In that country it forms a tree 100 feet high with quite workable timber, but it has not yet reached anything like that size here, fifteen feet being considered a good specimen. The leaves are needle-like, about three inches long, bright green and radiate from the apex of the branch in the form of the ribs of an umbrella.

The best soil for its successful cultivation is one which contains a good percentage of peat and is retentive of moisture, as this plant will not grow in a soil which gets dry.

As the growth is erect, or fastigiate, the plant looks well planted in a large bed with a number of dwarf rhododendrons or heaths, and as these plants require the same kind of soil they are easily provided for in the same bed. There are fine examples of the *Sciadopitys* near the pagoda at Kew. Young trees may be purchased from nurserymen who make a speciality of conifers for about 10s. each.

J. G. W.

Livestock for Profit and Pleasure.

POULTRY.

Some Notes on Combs.

THOSE who breed birds for the show-pen are well aware that amongst the numerous points of excellence which enhance the general appearance of an exhibition fowl the possession of a good-shaped, evenly-serrated, or beautifully-worked (or corrugated) comb of the correct shape and style is of great importance, and will assist its owner in gaining the coveted premier prizes.

That the comb demands attention is evident from the fact that, no matter how a fowl may excel in colour, size, shape, and style, if it displays a wry or malformed comb, there is little doubt that, when its merits have been adjudicated upon by the judge, it will be found to occupy an inferior position.

Signs of Condition.

There is no more infallible sign of a fowl's good or bad condition than the appearance or colour of the comb, for a fowl that is ailing from sickness, want of condition, or any disease will very quickly display a pale-coloured and sometimes black-tinted comb, often covered with white spots.

In contradistinction to this it will be found that a healthy, well-conditioned fowl will display a lovely bright blood-red comb. Indigestion, often through over-feeding or disease

of the liver, generally due to an excess of maize being given, greatly affects the colour of the comb, and if a remedy is applied in an early stage of the malady a considerable improvement will be noticeable.

I have found that nothing is more effective than Epsom Salts or Glauber Salts given in the soft food or drinking water.

The combs of some fowls are sometimes covered with a kind of scurvy or white surface, which, if allowed to continue, will quickly become very unsightly. This is generally the result of overheated blood, and, in addition to purifying by means of green food, the comb may be dressed with carbolic ointment.

Single Combs.

I shall now pass to a brief description of the combs of our various breeds of poultry. The Mediterraneans claim the premier position, whilst the Minorca claims the possession of the largest comb of all breeds of poultry.

In the male bird it will be seen it is perfectly upright, single and evenly serrated—that is, the seven spikes being the same distance apart and well cut, the front part projecting well on to front of beak, and the back portion being gracefully in a line with the back of the head.

In the hen it is equally large, possesses the same number of spikes, but instead of being erect it droops gracefully over one side of the face, almost covering it.

possessing a small, dwarfed, thin comb will seldom breed strong chickens.

The ornamental appendages possessed by our Mediterranean poultry can be much increased by liberal feeding—when between the ages of three and six months—on lean meat, cooked and finely chopped, also Spratt's poultry meal, in which a little of their Crissel (an excellent mixture of dried meats) has been mixed; but care has to be taken, or the combs will grow too fast.

The old-fashioned Dorking has a fine textured, well-serrated and erect comb of a smaller type, and is semi-circular seen from the side, except the White Dorking, which is rose or double-combed.

Next the Orpington, which, in the cock, has a small, evenly-serrated comb; but the serrations, of which there are some seven or eight, are small; the hen's comb is also erect, but rather small. Similar in size, shape, and style are the head-gear of the Plymouth Rock and Langshans.

Rosocombs.

A very pretty comb is that known to the poultry fancy as rose-comb, chief of which is seen in the Hamburg. It will be seen it possesses a well-worked "rose," not only wide and square in front, but gradually tapering to a long spike at the back and pointing slightly upwards. It must be perfectly flat

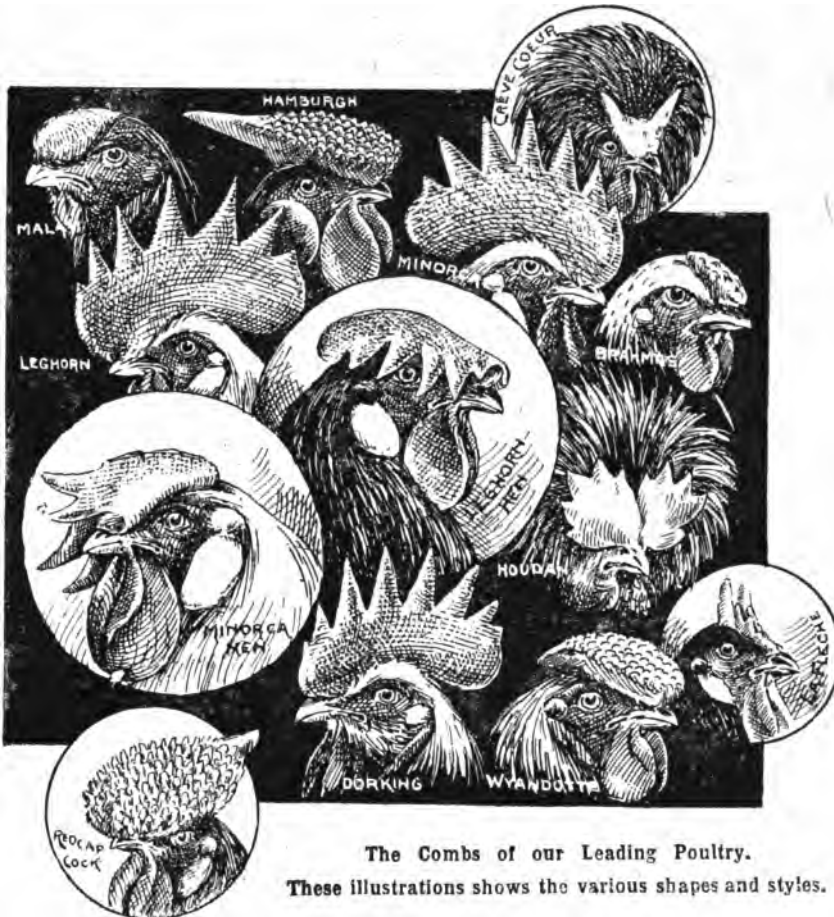
on the top, well set on head, and be full of small points known to breeders as "work."

The comb of a good Hamburg is an object of much beauty. Somewhat similar is the Redcap, whose chief possession is a ponderous rosecomb of symmetrical shape, full of work or spikes, and having a straight leader at the back. The comb is set straight upon the head, and should not hang too much in front or have any hollow in the centre.

The popular Wyandotte comes under the rosecomb class, but with this distinction: the whole comb, and even the leader or small spike, is slightly curved and follows the line of the skull, being firmly set on the head, the top oval, and the entire surface being covered with corrugations.

The Brahma possesses a triple or pea-comb—that is, three parallel ridges (very small combs), the centre one being slightly higher than the other two.

Other forms of comb are shown in our illustration.



The Combs of our Leading Poultry. These illustrations shows the various shapes and styles.

Next to the Minorca the Andalusian and Leghorn claim attention, both having combs somewhat similar in shape and style, but not nearly so large, whilst the texture is much finer. I should here mention that the comb of the Leghorn hen rises almost straight up for a short distance and then bends gracefully over to one side. I mention this to remove an impression which sometimes prevails amongst amateurs that the hen's comb should fall straight down over the face, almost obscuring the sight of one eye.

Before passing to other varieties I would state that in the aforementioned breeds it may be taken as a fair indication of the hen's laying powers if she possesses a large and well-developed comb. In fact, most utility poultry-keepers adopt this plan of selection when mating up their pens for a reliable "laying strain" of profitable fowls. It may be said of the cock that a good, well-set comb is a sure test of his powers of fertility, for a cock

What is Deafness ?

A Leading Specialist tells of the Discovery of the Cause and Cure of Deafness.

It would perhaps be difficult for the average man to describe deafness, and even the sufferer from this most dreaded of all diseases could little more than describe the distressing and painful results from his inability to hear well.

For years medical men have worked in this one direction—the discovery of what deafness actually is—and it has remained for a British specialist not only to actually determine what deafness is, but what is more important, to at last proclaim a cure of this ailment.



Professor Keith-Harvey, whose name is now so much to the fore, and who is probably the most sought-after man of the day, has, after years of earnest research, published a book which, to the deaf, is of especial interest, for in its pages is described the history of the discovery of the cause of deafness and a method by means of which sufferers in their own homes may have their hearing completely restored.

Deafness is the inability to hear sounds, caused by inflammation of certain inner portions of the ear, and is not, as is generally supposed, the result of the bursting of the drum of the ear. Deafness may result from slight cold in the head, and if neglected, will result in total inability to hear.

THE INSIDIOUS DISEASE.

Deafness is the most insidious of all diseases, growing in severity day by day. It is a disease that affects the mind as well as the body, and to the sufferer seems, in certain forms, a kind of madness.

Professor Keith-Harvey, in whose book a great amount of valuable information on the subject of deafness has been stored, tells of the system of treating diseases of the ear, deafness, noises in the head, discharges, &c., which he has made so famous.

Professor Keith-Harvey's system of treating deafness and ear troubles is quite simple, and may be carried out by the sufferer in his or her own home without even the trial of visiting the doctor.

The success of the professor's system is proved in the thousands of testimonials he has received from grateful patients. In many cases these letters have been sent from people who have never even visited his consulting-room, and the marvellous cures described convey to every sufferer a distinct message of hope.

Professor Keith-Harvey, realising that to many thousands of the readers of this paper his book on "Deafness" would prove of interest and value, has made arrangements whereby every sufferer may obtain a copy absolutely free of charge.

A letter sent to Professor G. Keith-Harvey (Room 875), 117, Holborn, London, E.C., will bring a copy of the book, and if particulars of the ailment are given a special letter of advice which will prove of immediate benefit in the relief of pain and suffering.

DOGS.

The Clubs—New Scale of Points for French Bulldogs—Spaniels' Field Trial.

THE Scottish Terrier Club, England, is congratulating itself upon having a bank balance in hand of £100 odd, a substantial sum to devote this year to the advancement of its interests.

The Toy Spaniel Club has gone through some changes of leadership owing to the retirement of Mr. Jenkins, the former secretary and treasurer, through ill-health. The new officers are Miss Hall, secretary, and Mr. Harvey Nixon, treasurer, which represents equitably the northern and southern interest in the popular King Charles line of spaniels. The Hon. Mrs. Neville Lytton has been elected a judge of the Blenheim and Tricolor variety, and her appointment should mark a new era in sound legs and independent opinion, for she is a strong advocate for producing sturdy healthy companionable dogs, intelligent and fond of outdoor life, no matter how small or beautiful to look at.

The new scale of points determined by the committee of the French Bulldog Club is as follows:—General appearance 15, skull 10, ears 15, eyes 5, forehead 10, under jaw 5, neck, chest and shoulders 10, body 10, legs and feet 5, tail 10, coat 5; total 100. The committee includes five new members, who are Mrs. Townsend Green, Mrs. Chas. Waterloo, Colonel Romilly, Mr. Crocker and Mr. Gill.

A useful thing to remember by those who keep more than a couple of dogs is, that what will suit one dog in physic or feeding will not suit another, and that before one can lay down rules, some little attention and supervision must be exercised to note what makes for health and beauty in each one, and plan diet and hygiene accordingly.

The entries for the next field trial of the Spaniel Club will close on July 31st, and it is noteworthy that cockers will be eligible to enter as well as field spaniels proper.

There are signs of a renewed activity in the British Dalmatian Club, who have elected the following judges:—Dr. Franks, W. Proctor, W. F. Livesey, J. Broughton, J. Dawson, R. B. Blackburn, F. A. Warwick. At the Royal Lancashire Show it is expected there will be given no fewer than seven classes for the "plum pudding carriage dog."

CATS.

Notes on Breeding.

LET those who wish to take up cat breeding for profit start with two good females, say a blue and silver Persian. When purchasing it is advisable to secure cats of undoubtedly good pedigree.

If you are a novice advice should be sought from some experienced fancier. The best time to start is in the early spring, and the females should be about a year old. Then when the right time comes these cats should be sent to visit reliable studs.

There are many advertised in the two leading cat journals, *Fur and Feather*, and *Our Cats*. The fee for a visit is generally £1 1s. This is money well laid out if the male is a prize winner and a noted sire, as under these circumstances the kittens will be more saleable. The price for Persian kittens varies, of course, according to the quality of the specimens, but £2 2s. or £3 3s. is a fair sum for really nice specimens if sold at about eight weeks old.

It is a mistake to keep kittens till they become four or five months as then they are shedding their kitten coats and are in the hairless and leggy stage. Nowadays, blue Persians that have not the desirable orange eyes do not fetch any price at all.

All kittens are born with blue eyes and these only begin to change at about four or five weeks old. It is an anxious period for fanciers. Experience soon teaches the breeder

whether the eyes will ultimately be green, yellow, or orange. In some breeds, such as brown tabbies, silver tabbies, and Chinchillas, the question of colour of eye is not so important as in the self-coloured cats, viz., blacks, whites, and blues.

The question of hampers versus boxes for cats travelling, is one that demands attention, more especially in winter. Hampers should be covered outside, as inner linings will often be scratched down by struggling and protesting pussies. There is no covering so warm and air-tight as brown paper, and this should be securely tied round the hamper. Thus there will be plenty of ventilation through the top.

If boxes are used it is very necessary to put a large notice of "Live Cat, With Care," as otherwise the box may be thrown down and the animal seriously injured. Very large hampers or boxes are not desirable as cats are more apt to get knocked and rolled about than when they are in closer and more compact travelling cases.

CAGE BIRDS.

Making a Garden Aviary.

The Framework.

LAST week we gave some notes upon how to begin making a garden aviary, and indicated that after marking out the ground space, the front and back posts should be set firmly in concrete. The next thing is to connect the two front posts at the top with a length of the same material, then follow with the back posts, and then connect front and back posts from top to top across the ends.

All these connections should, if possible, be made with tenon and mortise joints, failing this they may be cut at a proper angle and secured with screws and iron angle plates. Next secure a bar of similar timber across one end, between front and back posts, about six feet from the ground, to form a lintel for the door. The framework will now be complete.

The lower part of solid boards or brickwork may, of course, be substituted with wire-netting if required, but is not so stable a structure. Assuming the solid portion is preferred, three-quarter inch boards should be used, and, of course, nailed on to the corner posts.

This portion should be two feet high, and when this is done, the wiring may be commenced. This should be of half-inch mesh, as anything larger will allow the smaller finches, particularly the foreign ones, which add so much beauty to any collection, to escape. It must be fastened on to the framework with three-quarter inch wire staples. See that the door works well and fastens securely, and the aviary is practically complete.

Finishing Touches.

When the situation is bleak or exposed it will be an advantage to fully enclose about five feet at one end with boards and roofing felt, as a protection to the birds. The floor may be covered with a few inches of gravel, or loam, and a layer of fine turf, though the latter will probably soon die, if the concrete floor is properly made, from lack of foothold.

For the same reason plants and shrubs will rarely thrive, even if the birds would permit them, unless they are planted in tubs or pots, so that they may be replaced by others and given a rest from time to time. Lastly, give the whole of the woodwork two or three coats of dark green paint.

Never be tempted to cover an aviary with tar. It is a messy and "botchy" job, and often takes months to dry properly. If the expense is no objection a coat of Brunswick black on the wire-netting will give the whole a neat and trim appearance, and prevent the wire rotting.

It will also enable the inmates to be seen far more easily than one can see them through the naked wire.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 96. VOL. 4.

MARCH 16, 1907.

1d. WEEKLY.

Some Marvels of the Microscope.

Insect Life Revealed.

By ARTHUR HARVEY WILLIAMS.

Illustrated from photographs by GEORGE AVERY.

THAT industrious little worker, the honey bee, is not exempt from the attentions of parasites. One of the most formidable of these is a wicked and ferocious-looking creature known to naturalists as *Braula cæca*, and known commonly as the bee-louse.

It is a squat, spidery-looking insect, and, by some observers, is regarded as a sort of first

lower part, but more attenuated as they reach the terminal portion.

The two exterior lancets are spear-shaped, and of a horny substance; at the base of each is a hinge articulation that permits a considerable extent of movement. The function of these is evidently the distension of the internal parts of flowers in order to facilitate the introduction of the proboscis. The pair of shorter feelers have three distinct joints at their extremities. Some observers have regarded these as fingers for the removal of obstructions, but it is more likely that they are used by the insect in the process of loading and unloading the bee-bread in connection with the pocket receptacle with which the legs are provided.

After gathering the honey, the next care is to fill these pockets, and when loaded with as much pollen as the creature can conveniently carry, it flies back to the hive with the load, where it is speedily assisted to remove it by its fellow-workers, the pollen being at once kneaded and packed in the cells that are provided for it.

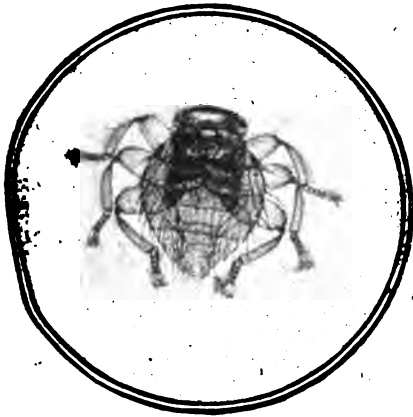
If a bee is attentively observed whilst at work at a flower, the activity and promptitude in which it uses this apparatus is truly surprising. It lengthens it, applies it to the bottom of the petals, then shortens it, bending and turning it in all directions for the purpose of thoroughly exploring its interior and removing the whole of the pollen.

"The dainty suckle and the fragrant thyme,
By chemical reduction they sublime,
Their sweets with bland attempering suction strain

And curious through their neat alembics drain,
Imbib'd, recluse, the pure secretions glide,
And vital warmth concocts th' ambrosial tide."
Brook.

In connection with the preparation of insect parts such as are frequently pictured in THE

The sorry appearance that many of such slides often present and particularly those of the older mounters prompts a protest against the treatment that is too often accorded to them. Liquor potassæ is a chemical for which many preparers had a very strong affection; potash is all very well if judiciously used, but when it is allowed a free course its action provides a complete destruction of muscular and other tissues, until nothing is left but the mere shell of the creature or organ subjected to its influence, and when the similarly antique crushing of the object is effected by means of



The Parasite of the Honey Bee.

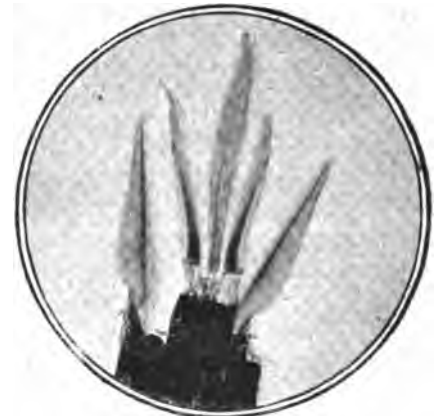
cousin of the sheep tick (*Melophagus*), but upon this relationship a difference of opinion has been expressed. At one time, it was considered that *Braula* had a preferential regard for royal blood—that its attentions were directed to the queen bee only. This, however, has been disproved.

Where it does exist, however, in a hive, its effects are only too evident, for the restless and excited state of the colony is such as to interfere most seriously with the industrial habits of the bees, and the quantity of their natural product. The foot of the parasite is, in particular, a most interesting object for the microscopist.

A wonderful little mechanic is the saw-fly, the title of which comes from the form of the ovipositor (or egg-depositing organ) of the female. This consists of a pair of saws of the most perfect and practical shape for the purpose they have to fulfil—the cutting of a groove in the bark of a tree in which the eggs are laid.

These saws, when in action, are used alternately with great rapidity; their function fulfilled, they are stowed out of harm's way in a long, narrow slit beneath the hinder part of the abdomen. The accompanying view is a good one of the terminal part of the organ, with a magnification of 150 diameters.

Another of our pictures is of the proboscis or trunk of the honey-bee, the purpose of which, and its associated parts, is the collection of honey. The proboscis itself (the central organ in the view) is very curiously divided, and its divisions appear, at first sight, as a number of different articulations, each of which has a circling of spiny, hair-like processes around it, short and broader at its

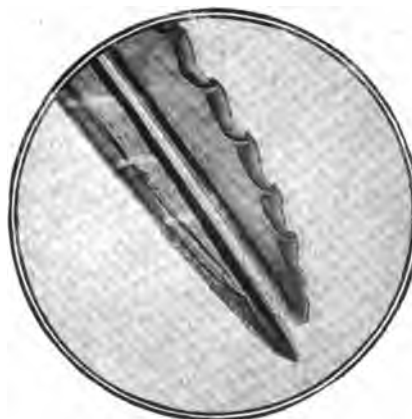


Proboscis of the Honey Bee.

strong pressure, the result is an item crushed together into an unintelligible flatness, and quite devoid of anything like a display of muscular or other parts, nothing but a caricature of its original form and beauty, and providing but little or no evidence of the interesting relationship that existed between the different portions.

A much better plan, and one that is more educational as well as more beautiful in its results, is to immerse the object in diluted glycerine, to which a few drops of acetic acid have been added; after a stay in this it should be fixed up in a shallow cell and in a similar medium. This will provide freedom from pressure and distortion.

Objects thus treated are items of beauty, particularly when viewed by dark-ground illumination, of which we hope to treat later on. I have four mounts before me that illustrate and emphasize this point—two each of a soldier and the mouth organs of a wasp; in each case the cell slide is beautiful; the spider shows the muscles by which the falces and other parts are moved, whilst the wasp's tongue exhibits its various parts in their normal form. Contrasting with these, the corresponding objects deserve condemnation, as being nothing more than travesties of what they would have been under more fair and rational treatment.



Ovipositor of the Female Saw-fly.

COUNTRY-SIDE, and their subsequent mounting as micro-slides, a few remarks may not be inopportune.

Country-Side Notes.

Warham, Norfolk.

"Experience during a long life leads me to the delightful belief that if you take an animal young enough as a pet you can love a soul into it."—C. B.

THE song-birds seem to have no manner of doubt that the season of love and hate and song and fighting is at hand. Every week, every day almost, the chorus of their matins and evensong swells louder with new voices and more resonant emphasis of faith and hope; and of all these early singers the song-thrush pleases best. Retired apart and sitting lowly, like some demure brown nun, in a hedge corner of the shrubbery, the song-thrush seems to be trying over all its notes and cadences to see which will give its listeners the greatest pleasure. Some are crystal clear; some low and full; some almost harshly quaint; and all are repeated separately, or in twos and threes, as if to test their full value against the obligato accompaniment of the woodland chorus. Listening to the song-thrush the feeling grows upon one that the bird is talking in song, that it means something all the while, whereas the blackbird seems to be consciously 'discoursing sweet music,' as the phrase goes, and to invite you to listen to his best passages. Everyone has fancies about the songs of birds; but I cannot help regarding the blackbird as a finished performer, conscious of his powers, and the thrush as a sweet singer, singing from impulse. The blackbird sings to please; the thrush pleases to sing—so, at least, fancy would train it, did one not know that both sing from sexual rivalry."

—THE COUNTRY DAY BY DAY.

In our B.E.N.A. column is printed today the final form of declaration of the League for the Preservation of Wild Life. It deals only with birds, insects, and wild plants; and only those kinds have been included which a number of experts un-animously declare to be in imminent danger of extinction owing to the prevalent craze for collecting British rarities. Some kinds have already been exterminated. We are going to make a combined effort to save the remnant.

Each of the lists ought, of course, to be very much longer. If the Dartford warbler, for instance, is protected so should the marsh and aquatic warblers. Among our moths there are a great many kinds in equal danger of extinction with the three named; and of the plants only those have been named which were included in every one of the lists suggested by seven experts. If, then, our Declaration errs it errs largely upon the side of incompleteness; but it would be a portentous document if we extended it to all kinds of birds, insects, and plants which need protection.

And, fortunately, there is no need that it should be complete. We are fighting for a principle, not for details. Every collector—I hope—when approached in-

dividually, will say that so far as he is concerned, he would be very sorry to see a rare British species exterminated. I admit that there are men who collect, or employ collectors, for profit who would be base enough to chuckle at the prospect of the extermination of a British species, provided that they had a good stock of specimens; but THE COUNTRY-SIDE does not cater for people of that class. The ordinary collector's point of view, on the other hand, is that, although the extinction of a species would be a pity, he must take what he can, because "someone else" will, if he does not. Now, I have a high opinion of collectors of this kind—so high an opinion, indeed, that I do not believe in the existence of this "someone else."

The dream of every collector is to make his collection more complete than that of other collectors. It is like everything else in this world, a matter of competition. But the competition would be just as keen and enjoyable if the collectors agreed to play the game fairly and to keep their hands off wild things which cannot be destroyed without injury to the public interest. The only "someone else" in the case is the dealer who makes money out of dying British rarities. If enough collectors can be persuaded to sign our declaration the trade in British rarities will so dwindle as not to be worth carrying on. Every collector, therefore, who signs our declaration hammers a nail into the coffin of this iniquitous trade. For this reason it is better that our list should be short. When we shall have conclusively shown that there really is no "someone else"—except the dealer—to be considered, the principle will have been established, and every collector will be content to play the game fairly and according to rule.

I hope, therefore, that every reader of THE COUNTRY-SIDE who is willing to help in the work of saving our rare and beautiful British birds, butterflies, and wild flowers from extermination—for the sole profit of a small horde of unscrupulous dealers—will obtain a copy of the declaration and get it as numerously signed as possible, especially by men of science, naturalists, and collectors. And you cannot catch your collector too young. Boys who have a taste for natural history are the most dangerous collectors. To a smattering of the science of the twentieth century they add the acquisitiveness of the savage. I have been a boy myself. As a boy I discovered a new locality for the large blue (one of the butterflies included in our list) in the Cotswolds. In one small space, when the ground was carpeted with the wild thyme on which the caterpillar feeds, they were almost as thick as the bees. I did not keep the secret, and collecting boys tramped cheerfully out to the "locality"—seven miles from school at Cheltenham—and tramped cheerfully back with boxes so full of large blues that as many as five of the butterflies were transfixed on every pin. After the boys came the dealers' agents; and in three years that "locality" for large blues was cleared out. Therefore it is well to get

the juvenile collector on the right side while he is juvenile. He will not leave it when he is older.

Although our "Schools' Mutual Aid" scheme will not pass beyond the experimental stage until next month, its widespread success seems to be definitely assured. Its programme is very simple. It aims at linking together separate pairs of town and country schools in all parts of the three kingdoms, so that while the children of our cities will be regularly supplied with natural history objects, fresh from the country, for study, the children of the villages will receive in return regular supplies of things which will give them a wider knowledge of the world in which hitherto they have been too isolated in their rural retreats. Each will thus become familiar with a wider horizon than that which now hems in their narrow lives. It will be "education" in the best sense for both, because it will "lead them out" of the grooves in which their thoughts have run, to realise by seeing, handling, and possessing things which hitherto have existed for them only in school-books.

At the outset the chief difficulty before the scheme was felt to be the cost of postage of the weekly parcels from school to school; and the Hon. Cordelia Leigh, who has so prudently pioneered it to the starting-point, arranged that until the month of April every step taken should be regarded as experimental only, trusting that the interval would show how this difficulty—and others—would be overcome. She has been amply justified. The first pair of schools to be linked together as an experiment were situated in the south-east of London and in Warwickshire respectively. From the head-masters of both schools we have since published enthusiastic letters on the working of the scheme; and from the educational authorities of the County Councils of London and Warwickshire we have also been able to publish assurances that the postage involved in the working of the scheme will be defrayed officially. The letter of the Director of Education under the Warwickshire County Council is published in our B.E.N.A. column in this issue.

At this point we may justly congratulate the hon. secretary of the scheme upon the complete success of her experiment. Indeed, her only fear is lest it may have been too successful. She is not afraid of the hard work which its rapid extension will involve, but there is just a little danger that those head-teachers who first hear of the scheme through the direct recommendation of their County Council may, as she writes, "look on it more as another subject to be added to the already overcrowded time-table than as a voluntary affair." There are, of course, many hundreds of teachers whose knowledge of Nature has been compulsorily acquired from the text-books used in their schools; and since these text-books give little practical knowledge of the common objects of the countryside, the periodic arrival of a parcel of "specimens" or the necessity

of despatching the same to a town school would be an unwelcome ordeal for them. If, however, such teachers will recognise that their adoption of the scheme is really "a voluntary affair," and will be content to hasten slowly, looking to THE COUNTRY-SIDE from week to week to give them hints and explanations of the means to be adopted, they will find that, instead of making an addition to their work, the "Schools' Mutual Aid" scheme will for the first time make it possible for them to interest their schools in Nature-study, and so satisfy the requirements of the educational authorities. What teachers have to realise is that "Nature-study" is not a passing fad. It is a channel of education which must grow wider and deeper with the years that pass.

* * *

The other day one of the weekly reviews referred to me as the originator of a "Nature cult" in literature which threatened to become as prevalent as the æsthetic cult of the last generation. This was in reviewing a book of republished Nature essays by another writer; and no doubt there is a tendency on the part of publishers and authors to over-stock the market with such books. But this passing phase of current literature has nothing to do with me except in so far as I, in common with other writers, have found that no one who writes of Nature nowadays can fail to meet with sympathetic hearing, whereas fifty years ago the study of Nature was regarded as the trifling hobby of a few unpractical enthusiasts. The reason for the change is that, fifty years ago, the study of Nature was scarcely more scientific than the study of postage stamps. The world was supposed to be filled with a vast number of "species," and science was concerned only in describing and enumerating them. The world was justified in regarding science of this kind as a mere hobby.

* * *

The discovery of the great truth of evolution, however, has changed the attitude of the world towards natural science, because it has reversed their relative positions. The world itself and all the manifold activities of human genius and energy are equally subject with the fly and the bird and the plant to the inexorable laws of evolution. Instead of being an unfruitful side-alley of knowledge in which a few "naturalists" appeared to waste their time, Nature, illumined by light of evolution, affords the only key yet discovered to the mysteries of life. Instead of being a hobby the study of Nature prepares the mind, as no other study can, to realise the truths of the past and the future. Hence the talk of a "Nature cult" as a passing fashion in literature is absurd. It is true that we have too many books of science-and-water thrust before the public nowadays, but that is because our present generation of writers have only a smattering of the knowledge that will be fully possessed by the generation which is rising now; and it is the education of the rising generation to understand the vital principles of Nature that the Nature-study of our schools has come to stay—and to grow.

* * *

This is the nature study which our "Schools' Mutual Aid" scheme will render easy and interesting for all con-

cerned; and week by week I shall if possible devote some space to hints for those who would like to know where and how to find natural objects worth the studying. By following these clues and by watching the "Week's Wild Life" from week to week, no teacher should meet with difficulty in giving to his school its proper place in the scheme of mutual aid, whereby great advantages will, I am sure, accrue to all concerned.

* * *

This week, besides the early spring flowers and leaves—which arrive perfectly fresh by post if packed into an air-tight tin box—a common object of interest is the thrush's breakfast-table. This is merely a stone, often quite a small stone or any other hard substance, upon which a song-thrush has been breaking the beautiful shells of the hedge-snails. This stone, with a collection of the broken shells around it will furnish material not only for explanation of the habits of the song-thrush, but also for notice of the two different kinds of hedge-snails and the large number of striking varieties of each. In any wood almost an interesting collection may be made of the little green twigs which the squirrel has bitten off the fir-trees—hence its persecution by foresters—and also of the cones which it has stripped, bract by bract, in order to get at the seeds. In ponds and ditches, again, may be found the jelly-like masses of frogs' eggs or the necklace eggs of toads twisted round the water weeds. These will make most interesting studies of development in an aquarium for many weeks. Lastly on any mild, warm evening examination of the herbage along a hedgerow or beside a woodpath with a lantern will reveal many fat caterpillars, of the yellow underwing moths and others, which may be collected and easily fed upon grass until they bury themselves in soil, to reappear in later summer as handsome moths. While looking for the caterpillars, too, you are almost certain to find one or more early kinds of moths sitting upon the bushes, the males with ample wings and the females with scarcely any wings at all. Both are easily captured in pill boxes, and from the eggs which the females will lay interesting broods of caterpillars may be reared. When, however, a country school supplies caterpillars or eggs to its linked town school care should be taken to send regular supplies of the food plant later.

E. Kay Robinson.

March.

Dear March with the wind-blown hair, there's gold on the gorse for thee,
And the sheen of the blackthorn buds, and the rose of the almond-tree,
There's mother-o'-pearl in the woods, where the snowdrops shimmer and sway,
And the song of troubadour thrush comes quaintly and sweet to-day.
Dear March with the sea-blue eyes, good-morrow we'll give to thee,
For we love the lilt of thy song with its whirling melody,
There's the joy of the Spring in thy smile, there's the wind of the hills on thy way,
And the breath of the violets wake to welcome thee, March, to-day.

AUGUSTA HANCOCK.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Porpoises in the Solent.—I saw a large school of porpoises travelling westwards, past Hamstead, I.W., in still water, at 12 to 12.30 noon, on Tuesday, February 26th. Five were playing, and a procession of about thirty (extending over a mile) were visible beneath the surface.—(F. Edward Norris.)

Birds Seen.

SWANS: Five passed over Beckenham about 7 a.m., travelling from S.E., northwards.—(F. Moreland.)

BIRD SEEN ON CHIMNEY at Leamington, and suggested to be a cormorant, was really a heron; it was shot at several times, but escaped unhurt.—(J. E. Lynn.)

WILD GESE: Flock of forty to fifty passed over Barby, Selby, about 8 a.m. on February 27th, flying very low in N.W. direction.—(B. Hanley.) A most extraordinary flight, in several different lots, all going due north, at Skegness, on February 26th. Same report from Wainfleet, five miles off, for same date. Does this indicate fine weather?—(W. J. Cooke.)

WOODCOCK flushed near Rotherham, Yorks., February 10th. "I have never seen or heard of one in this locality before."—(J. B. Garnett, B.E.N.A.)

In the Quorn district Redwings, Fieldfares, Wild Geese, Misselthrushes, Long-tailed Tits, Magpies, Pochards, and Tufted Ducks have been more abundant than usual this winter; but Gold-crests, Jays, Ring-doves, Peewits, Pied Wagtails, and Skylarks less so.—(G. F.)

Marked Birds.

BLACKBIRD with white tail has haunted Queen's Park, Glasgow, all the winter.—(T. F. G. Foster.)

BLACKBIRD noticed for some weeks in Lower Sandgate Road, Folkestone, with several patches of white on back, end wing feathers white, and tail also marked (L. W. Jones); Two, one marked on underside of tail and other on right wing, about Rugby; latter still there (C. Halliwell). Two with white heads and necks in Broadwater Down, Tunbridge Wells, both summer and winter. One with white speck on one wing has been there two years or more; the other, which only appeared last year, and is supposed to be its descendant, has some white on each wing. Hen with light grey, almost white, neck, in Clissold Park on March 5th.—(F. Page.)

FIELDFARE, pied variety, seen for about a fortnight towards end of December at Barby, Yorks; fieldfares very abundant this winter.—(B. Hanley.)

JACKDAW: One-legged specimen last seen on December 30th, 1906, reappeared on February 27th, at Torquay.—(F. Price.)

WIDGEON shot, one among twelve secured with red rubber band on leg, with some lettering, but only "H. Y." distinguishable.—(Kirkcudbrightshire Advertiser.) [Possibly a bird bred in captivity here, though widgeons rarely breed in this state; they do breed wild in Britain at times also.—Ed.]

ROOK with one or two white primary quills in right wing, feeding among others on Wimbledon Common, February 27th.—(H. C. Christian.)

Birds' Song.

MISSELTHRUSH recommenced song February 21st, Stroud, Glos.—(A. Miller.)

Early Migrants.

CUCKOO heard two or three times when crossing a field between Muswell Hill and Barnet on March 3rd, at 4.30 p.m.—(C. J. Terry.)

SWALLOWS: A couple flying about round the house ("Fernbank," Darlaston, S. Staffs.) all day on February 23rd, but not seen since.—(W. Whitehouse.)

Queries, Answers, & Correspondence.

(Correspondents will greatly oblige by writing on one side of the paper only)

Strange Death of a Hawk.—In the public park here (Darlington) on February 7th, one of my workmen was passing along the side of the bowling green when he saw some sparrows feeding on the ground. Then he noticed a sparrow-hawk descending like a flash to catch one of the sparrows. Imagine his surprise when, instead of picking up its bird and making off, the hawk struck the hard, frosty ground and killed itself on the spot, its head being completely smashed in. What I think took place was that when the hawk was within a few yards of the ground it must have seen my man, and so for a moment its attention was on him, which thus led to its death. It was a very fine specimen of the sparrow-hawk.—J. MORRISON, Parks Superintendent, Darlington.

"The Work of the Ivy."—Your correspondent Mr. Lucas is in error in saying that ivy, if severed from its roots, will invariably perish. For many years we have had two kinds of ivy growing on our house wall—a very pretty yellow-leaved variety and one with green leaves and white veins. My grandfather did not like the green kind, and about four years ago he commenced to destroy it by severing it from the root. He then poured salt and water on the root, and finally burnt it, pulling down all the ivy he could reach. We have since dug up the root. Now, it is quite evident that no nourishment can be derived from a root that is dug up and thrown away, but the ivy still grows and flourishes high up on the wall out of reach, so it must obtain nourishment, or it would long ago have perished.—(Miss) M. J. BRIAN, Sutton, Macclesfield.

[I think it is established that ivy can continue to live for years by means of extra roots from its branches after it has been severed from its root. The questions remaining are to what extent, if any, the so-called "suckers" can absorb nourishment, and whether these extra roots are modified "suckers" or spring independently from the leaf-joints of the branches. On these points authorities differ.—Ed.]

Foreknowledge of Storms.—Mr. Swinton's note on p. 135 implies (1) that at Totnes gales of wind occur only at periods of about twenty-eight days, and (2) that the spots on the sun and its rotation on its axis are responsible for that remarkable fact. Personally, I was not aware that there was any periodicity about wind in this country, even the so-called equinoctial gales don't often appear at the equinoxes, and sometimes not at all. However, assuming the twenty-eight day (more or less) period at Totnes, how can the sun affect it? The latter is not always spotted; there are sometimes no spots observable for weeks together, and it has been proved that sunspots

have no bearing at all on what is commonly called "weather." Under certain conditions a spot may produce electrical effects on our globe, such as disturbance of telegraphic instruments and appearance of aurora, but this is only an occasional occurrence, and only an occasional spot is operative in this way. It is difficult to see, too, how the sun's rotation can have any influence. He is always rotating, and one must therefore assume, to account for the twenty-eight day period, that only one small strip of the sun's surface can produce the effect. This cannot be a spot, because spots are not often persistent through a whole rotation.—C. NICHOLSON, Chingford.

Squashes.—Mr. W. F. Buzza, of Leominster, sends us a photograph of two gourds, or squashes, which he grew from seeds obtained from America, and which he thinks are unknown in England. When cooked, he found them better in flavour than the vegetable marrow, and their flesh solid and mealy. He

A Giant Parsnip.—My gardener to-day brought me in a parsnip, which, when measured, proved to be three feet two inches from the top of the root to the tip.—"AN AGRICULTURIST," Snaith, Yorks.

"Needle in an Egg."—On page 194 of THE COUNTRY-SIDE one of your contributors speaks of a needle being found in an egg. I beg to offer a solution of this mystery. My mother, who was a great poultry fancier, and bred and exhibited a great many birds, always pricked all eggs when sold for consumption, as this renders them unfertile. Doubtless this egg had been treated in the same manner, only the needle disappeared inside. A horse hair introduced through a small hole in an egg has often caused speculation of the wildest nature.—KATE B. BRACKENBURY, B.E.N.A., Shouldham, Norfolk.

Limits of Migration.—I should be glad of your opinion of this suggestion, that in birds of passage—swallows and martins, for instance—each individual has only a fixed length or area latitudinally, these two species altogether covering from 10 degrees south to 65 degrees north. The individuals of them that go as far north as 65 will only go south to about 40 degrees, and those that go on far south as 10 degrees will come up north only to 40 degrees. Of course, I am dealing with this side of the equator. In confirmation of this view I have long had proof. One of my daughters, a good ornithologist, writing me yesterday from Mentone, Nice, etc., says when she arrived there, nearly a month since, she saw plenty of swallows. They are there now. Very likely these will go to nesting haunts up to 65 north in April;

while those swallows that went farther south to 10 degrees will come up to 40 degrees. In that case swallows, etc., will not be absent from the south of France, Spain, etc., at any time unless abnormal cold occurs for that latitude.—C. E. READ, Moston, Manchester.

[The suggestion coincides in the main with my own view.—Ed.]

Supposed Flowering of Castor-Oil Plant.—Your correspondent, C. H. Russell, is quite right about our plant. Although we have always called it a castor-oil plant, we knew it was an aralia, and I was much surprised when I saw that you had called it *Ricinus communis*, especially as I found that that plant was an annual in this country.—MRS. V. I. DUNN, Riding Mill-on-Tyne.

Varieties of Chaffinch?—I cannot think there is more than one variety of chaffinch (British). Colour, light or dark, depends upon the county. For instance, Lancashire birds of all kinds, especially in coal-mining and iron districts [and where factories abound, are darker in colour than birds, say, in Kent and Sussex, where air is pure and sunshine undimmed.—C. E. READ, Moston, Manchester.

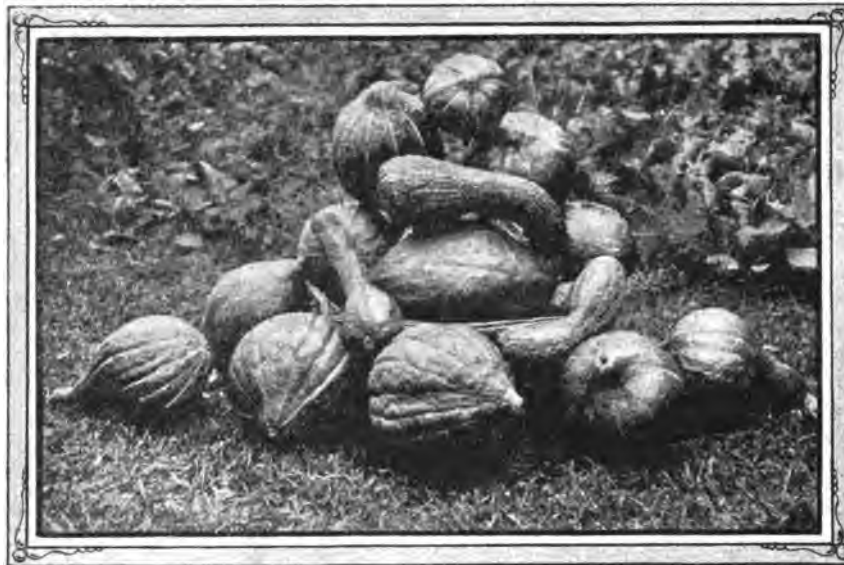


Photo.]

[W. F. Buzza.

Hubbard and Crookneck Squashes.

These are favourites in America and useful substitutes for vegetable marrow.

believes that if they were known they would be extensively grown as a vegetable. The Hubbard Squash, which is the thicker of the two kinds represented, is an old garden vegetable, and if it is not grown it is because its dark yellow, floury, rather dry and poor flavour do not find favour in this country, although they are not objected to in America and in some Continental countries. The Hubbard is a good keeper, owing to the thickness and almost leather-like consistency of its skin. It has long trailing stems and covers a lot of ground. The fruits are about six inches long. It is a form of *Cucurbita maxima*, to which species most of the big pumpkins, gourds, and squashes belong. The Crookneck is a variety of *Cucurbita moschata*, and is also a well-known gourd, better, to our taste, than the Hubbard. Its fruits are eight inches long, flask-shaped, with a curved neck, and they are matured early. They keep well, and are of excellent flavour when cooked. The plant does not require more than about three square yards of space. The seeds of both kinds are offered by such dealers as Vilmorin and Co., of Paris, and Haage and Schmidt, of Erfurt, at 3d. or so per packet.

Cats and Glass.—My cat had evidently no motive in touching glass beyond the desire to enjoy an agreeable sensation, for she always kept her "gloves" on, and drew down only one paw very slowly and deliberately.—A. J., Somerset. [This is reply to the suggestion that the cat stroked the glass because she wished the window opened.—Ed.]

"Billeting" Rats.—A few weeks ago your "Answers to Correspondents," questioned as to how to banish rats, gave us a very excellent prescription. I wonder could many of your readers be found to favour the more direct method of "billeting," as practised now and again at the present day in England and Ireland? The piper of Hamelin town is a well-known character. I fear me his Irish confrères are blushing unseen, though for their work they need neither violin nor pipes. Last December an old veteran, as a very special mark of his favour, made known to me the words of might. "In sixty years," he said, "they never once failed me." The talismanic terms are to be in part printed by the pen (so he stated) and in part written out in a clear round hand on a white sheet of paper. In it the rodents are solemnly bidden to decamp from where they are and betake themselves to another place, which is named for them, and declared to be "snug" and "a good lurking place." The white sheet of paper so charged is neatly folded up, the corner sealed with grease (candle grease preferred). This marching order addressed to "Majestic Rotus, Rotus Majestic" is left at the entrance of one of the most frequented holes. Next day the rats are found to have cleared away one and all! I can vouch for it my veteran friend received several engagements. His success I am unable to state, with certainty, anything about. A neighbouring gentleman told me that a friend told him of a farmer who, early one summer morning saw an army of rats so migrating through the dewy grass. They were headed by a great old gray fellow (most likely "Majestic Rotus" himself), and he carrying the billet in his mouth! I don't think I shall experiment with the charm myself, and I am very sorry I have no permission to disclose the whole of it to others, much though I know they have suffered. My old friend must not be deprived of his monopoly.—J. M.

Doves' Notes.—The wood pigeon's, or cushat's, slow coo may be written thus:—"Oo-coo-oo-coo-oo." I have noticed that the first three notes are higher in pitch than the following two, and this fact is more marked when the bird repeats, which it generally does but once, making ten notes in all, with a separate, sharply-uttered "oo" at the finish. After a pause it then begins the whole over again. The turtle-dove does not coo in the true sense of the word. Its notes may be described as "Turr, turr, turr." A short pause ensues between the first two notes and the last. The rock-dove has two notes, which it repeats, thus: "Coo-roo.—E. M. MURRAY-MORGAN, Didsbury.

A Supposed Buried Frog.—Herewith is reproduced an illustration from a photograph of the frog which was referred to in "Country-Side Notes" of February 2nd. The published accounts in the newspapers said that the frog—which was discovered in the centre of the Hem Heath coal mine, Chesterton, North Staffordshire, at a depth of 825 feet—must, of course, have reposed there for thousands of

years during the formation of the coal and other strata." "As far as one can judge," the account went on, "there are points of difference as contrasted with the frog as we know it to-day, the pointing of the toes—very much like a human hand—being curious." And again: "It must have found its grave during the great upheaval known as the Tertiary period of the world's history. When it is remembered that since that period two-thirds



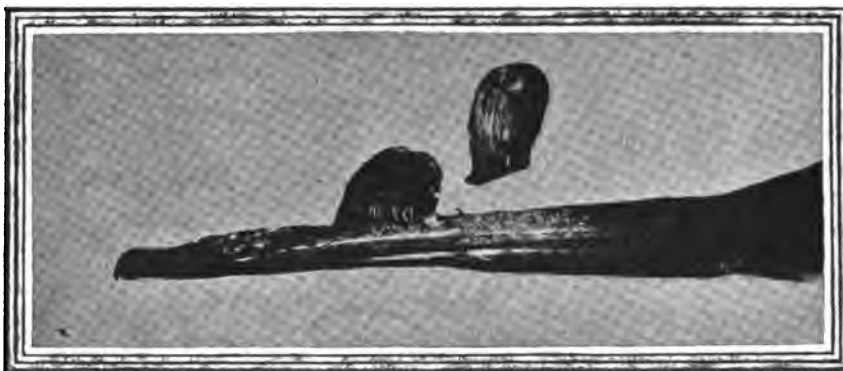
[Photo.] [G. E. Jeffries.

A Supposed Buried Frog.

An examination of this photograph will show that the creature is an ordinary modern frog.

of Europe has been lifted out of the sea, it is a matter for wonderment," etc. All this is, of course, pure assumption; and anyone who examines the illustration here given will see that the dimensions, etc., of the mummied frog are those of the common modern frog.

The Pelican's "Centre-Board."—The beak illustrated in the photograph is that of the American white Pelican (*Pelecanus trachyrhynchus*), with the curious hard outgrowth which develops on the top of it in the breeding-season. This growth, shown both *in situ* and separately, is common to both sexes, and is not always so well developed as in the picture, being often low, irregular, and broken up. Altogether, it has a pathological appearance, and may be merely a useless periodical growth, which, being harmless, has been allowed to become hereditary. After the breeding-



[Photo.]

[Clarke & Hyde.

A Curious "Ornament."

The upper mandible of an American white pelican, showing the remarkable excrescence which forms on the beak during the breeding season, and also one of the excrescences detached.

season it is shed like a deer's horn, and plenty of these "centre-boards," as they are sometimes called in the States, may be picked up on shores frequented by the birds. It may be mentioned that this pelican is rare in captivity here—though there is one specimen now at the Zoo—and that the pelicans in St. James' Park are only the common Old-World Roseate Pelican (*P. onocrotalus*).

Correction.—In our astronomical notes for March 2nd, the word "one" in line 20 should have been "our."

Astronomy.

THE DISTANCE OF THE STARS.

By Norman Lattey.

THE first successful attempt to approximately plumb the depths that separate us from even the nearest member of the stellar universe was made in 1830 by the famous German astronomer, Otto Struve, at Dorpat, in North Russia.

The result was, however, far from accurate, and was much improved upon soon afterwards by the equally celebrated Russian astronomer, Friedrich Bessel, who, selecting the star numbered 61 in the Constellation Cygnus (The Swan), devoted his attention to a long series of careful measurements of its position.

Simultaneously, Thomas Henderson, Astronomer Royal for Scotland, but at that time astronomer at the Cape Observatory, was at work on the bright Southern star, Alpha Centaurus. Both these stars were chosen on account of their large "proper motion," i.e., their comparatively rapid apparent movement in the sky.

Needless to say, the observations were of extreme delicacy; they were also attended by extraordinary difficulty, owing not only to the flickering of the much-magnified stellar images from atmospheric quiverings, but also to the practical impossibility of fixing a definite point of reference from which to gauge the change of direction.

The only reliable standard from which measurements could be made seemed to be that of the earth's axis of rotation—in other words, the point in the heavens constituting the celestial pole. It is true that the precise position of this point varies slightly during the course of the year, but the variation is known with great exactness, and it was thought that by this means the most infinitesimal displacement of a star from its last recorded position could be detected.

In this, however, astronomers were woefully disappointed. The uncertain and changing effects of the seasons and the different temperatures of day and night on the air and the instruments rendered the results quite untrustworthy, notwithstanding the employment of the finest instruments manipulated by the most skilled observers. The method now adopted, though admittedly not perfectly free from slight possible error, is that of the comparison of a star sufficiently near to the Solar system to enable its "proper motion" to be ascertained, with one either absolutely fixed or so far off as to render any movement quite imperceptible.

The deductions so obtained by the aid of an instrument called a heliometer, are now regarded as tolerably correct. The photographic telescope is also an invaluable adjunct, since its use is not only exceedingly simple but most convenient, as the plates can be examined at leisure, and provide a permanent record.

It is the usual practice to express stellar distances in terms of a standard unit. For this purpose nothing less comprehensive will suffice than a "light journey" or the interval traversed by light in a year, travelling at the rate of 186,300 miles a second, which represents six billions of miles (6,000,000,000,000).

On this scale the nearest stars Alpha Centauri and 61 Cygni are placed at 4½ and 8½ "light years" from us, while the brighter suns, Sirius, Procyon, and Altair are distant about 9, 10, and 14 "light years" respectively, with the Pole Star at 44 years.

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MARCH 16, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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How to Establish a Breed.

By B. N. WALE, B.Sc.

AFTER reading the article by "Chanticleer" on the Blue Andalusian a few weeks ago, it struck me that some of your readers might like to hear something of Mendel's Law in relation to the breeding and production of new varieties of plants and animals.

At the present time, both in England and elsewhere, the agricultural and horticultural experiment stations are showing the supreme importance of the bearing of this law on the work of the breeder.

Truth is ever stranger than fiction, and in the present case this is once more aptly illustrated.

Gregor Mendel seems to have lived before his time, and to have been in advance of his generation. In 1822 he first saw the light, and in 1843, when twenty-one years old, he was trained at Brunn for the priesthood of the Roman Catholic Church, and then appointed priest on the completion of his theological course. After some years he seems to have studied natural science at Vienna, where, then or later, he became greatly interested in hybridisation, more particularly in relation to plants. After his return to the monastery at Brunn he commenced a series of experiments on the crossing of different varieties of the common garden pea. He took up other genera of plants later—such as thistles and lychnis. He eventually became Abbot of Brunn, and died in 1884.

As a result of his experiments, Mendel found that when two different varieties were crossed they produced hybrids, and that these hybrids, when bred among themselves, produced offspring, some of which were fixed and some were again hybrids; but here was the supreme value of Mendel's work—he found the *proportion* of hybrids to the pure individuals in the second generation was a fixed numerical ratio. This I hope to make clear shortly. However, before proceeding it is necessary to state that Mendel's work remained unknown for thirty-five years. But recently—1900—three biologists were simultaneously led to a rediscovery of Mendel's Principles of Heredity.

To understand better what Mendel's principles are, let us follow his own experiments.

In choosing the plants he wished to hybridise, Mendel found from experience that two conditions were necessary:—

- (1) The plants must possess *differing* characters;
- (2) The flowers of the plants must be protected from the possibility of any foreign pollen reaching them during the flowering period.

These conditions Mendel found were naturally present, or could be artificially present if desired, in the pea. For the flowers are:—

- (1) Self-fertilised, *i.e.*, the pollen, when ripe, naturally falls from the anthers to the stigma of the same flower;
- (2) Insect interference can be easily prevented.

In one of Mendel's experiments he fixed his attention on the heights of the plants. He crossed tall varieties of the garden pea with dwarf varieties, and he found in this and in all his experiments that it made no difference which he made the pollen-producing and which the pod-bearing plant; in other words, which he made the male and which the female plant. The results were similar whether he transferred the pollen from a dwarf variety to a tall variety, or from a tall to a dwarf variety. He found on sowing the seeds thus produced as a result of the cross that all the plants were tall. But strange to say, when seeds produced by these tall hybrids were sown, they produced both tall and dwarf plants; there were none of intermediate length, they were either tall or dwarf. The line of demarcation was clear and distinct; there was no placing of any of the individuals in a doubtful category.

Where Mendel chiefly scored, however, was that he counted up and kept records of the numbers of the tall and the dwarf plants. In one experiment he obtained the following results:—Total plants, 1,064, consisting of 787 tall and 277 dwarf plants. These figures showed that one character, *viz.*, the tall, was dominant over the other—the dwarf; hence he called the tall the dominant, and the dwarf the recessive character. It will be seen from the above figures that the proportion of tall to dwarf is approximately as 3 to 1.

The next season Mendel took the seeds of these tall plants and of these dwarf plants, and sowed them separately, with the result that dwarf plants only were produced from the seed saved from the dwarf plants, *i.e.*, the dwarf plants (bearing the recessive character) bred true. But the seed from the tall plants was of a different character: some produced tall plants but some produced dwarf plants; again in the proportion of three tall to one dwarf.

I will attempt to make this clearer by supposing that some of the readers of THE COUNTRY-SIDE will try the above experiments for themselves during the present year, 1907. Suppose seeds of a tall variety of pea and seeds of a dwarf variety of pea be sown in February or March; and that in June crosses be made between them, and the seed from this cross be saved in July or August.

This seed sown in 1908 would produce all tall plants—the hybrid generation.

The seed saved from these tall plants and sown in 1909 would produce approximately three tall to every one dwarf plant.

Now, the seeds of the tall variety and the seeds of the dwarf variety must be separately gathered and kept separate, so that in 1910 the seeds from the tall variety are sown in one plot, and those from the dwarf variety in another plot, when it will be found that all the seeds from the dwarf plants of 1909 have bred true, *i.e.*, they have all produced dwarf plants. But the seeds from the tall plants of 1909 will be found to have produced mixed plants—some tall and some dwarf, in the proportion of 3 to 1 again.

If in 1911 we should sow seed from the dwarf plants of 1910 (*i.e.*, from those which bred true that year) we should again get all dwarf plants. In other words, the new breed with recessive characters is fixed in the second generation (if we count the hybrid as the first generation). Also, if we sow seeds from the tall plants we once more get both tall and dwarf plants in the proportion of 3 to 1. Some of the tall are pure, while some still bear the mixed character; which are pure tall and which are mixed tall can only be found out by growing them the following year.

The practical result of all this is that in the production of new varieties by cross-fertilisation, it is possible to fix the type in the second or third generation at least, and not wait six or eight years, as was the case before the rediscovery of Mendel's Law. The practice then in vogue was to carefully select and inbreed so as to fix the type, and then it was not properly fixed, as some of the impure dominants were not always discarded.

Good work has been done in the new lines by Biffen, of Cambridge University Agricultural Department, and, working on Mendel's principles, he has shown that if the parents (intended for crossing) bear two distinguishing characters each, that it is possible to produce a new variety combining one character of the one parent with one character of the other parent. Thus a wheat possessing the characters (1) low yielding; (2) resistant to attacks of rust fungus, crossed with a wheat possessing: (1) high yield; (2) great susceptibility to rust, a new variety may be produced possessing the characters: (1) high yielding; (2) resistant to rust.

Let us now turn to the animal kingdom, and especially to the case of the Blue Andalusian fowls. We find the same results hold—that having once got the dominants pure, we can go on breeding pure dominants, and from the recessives we can go on breeding pure recessives; but should we inbreed the individuals bearing the mixed characters, we shall get only one-half of the progeny bearing the characters of their parents.

Breeders have recognised this in the Blue Andalusian; there is always a proportion of birds altogether black, another proportion almost white, with a few black blotches. And when a large number of Andalusians are thus bred, the results approximate to the following proportion:—One-quarter of the progeny will be black, one-quarter of the progeny will be white with black blotches, and one-half of the progeny will be blue.

We are thus led to the conclusion that the Blue Andalusians are of mixed character; in fact, they are mongrels, whereas experiment has shown that the blacks breed true among themselves, *i.e.*, they produce blacks only. Also the whites with black blotches breed true amongst themselves, *i.e.*, they produce whites only.

Now comes the curious—yet not unexpected—result in the light of Mendel's Law, that when we mate together the blacks and the whites, all the offspring are blue. Therefore, the black and the white blotched are pure breeds and the blues are mongrels.

If, therefore, the aim of the Blue Andalusian poultry-breeder is to breed the largest number of blues, the best way to do it is to mate together a black cockerel with white blotched pullets, or white blotched cockerels with black pullets, and not to mate together the blues, which are really hybrids, and must bear the mixed characters of black and white blotched in their constitution, for if the blues be mated we have seen that only half their progeny will be blue.

Amateur Photography.

Photographing Natural Objects by Magnesium Light.

By J. H. CRABTREE, F.R.P.S.

A Migrant Snipe.

WHEN daylight is short and nights are at their longest there are many objects that it is very desirable to photograph independently of sunlight. The other day, when tramping on the borders of a large wood, I noticed an object struggling in the distance. The light was fast waning, but a nearer approach brought us to a beautifully feathered snipe which had just completed its existence. It was evidently a migrant which had come to grief from some cause which could not be seen externally. Its plumage was full; it had no wounds; it was quite warm, but it was dead. To photograph the bird there and then would have resulted in a poor negative wanting in contrast and "sparkle."

We bagged the carcase and dealt with it on reaching home—after darkness had crept over. It was essential that the bird should not be kept long; it was Saturday night; we did not care to photograph on the Sunday; to keep it till Monday would have been inconvenient. We therefore photographed the bird in an ordinary sitting-room at 8 p.m. with the ordinary gas-light fully burning.

How it was done.

A drawing-board was requisitioned and covered with a snow-white sheet of paper. This was good for two reasons; it brought out the bird's plumage in bold relief, and it afforded a capital reflecting surface for side-lighting different parts of the object. The wings were spread to show their general structure; the head was placed in such a position as to illustrate its different parts, and a foot of the bird was opened out so as to reveal its detail. The paper-covered board with the bird was then placed under the edge of a dining table.

A right-angle (see COUNTRY-SIDE, September 22nd, page 266) was clamped to the table and the camera attached to the vertical limb so that the lens "looked" downwards on the bird. Now for the focussing. To place a lighted taper close to the feathers might mean damage. This was carefully avoided.

Some bold print was culled from a newspaper and placed on the bird's feathers. With a taper held near this letterpress it was a simple matter to obtain a good focus at F. 8. But as we had several planes to negotiate we used F. 11 to increase the "depth" of focus, that is, to embrace all the horizontal planes between the upper surface of the bird and its white paper support. Arrangements were now complete for the crucial part of the work.

The Exposure

A roll of magnesium costs about sixpence and provides for thirty to fifty exposures according to lighting required. A length of twelve inches was cut from the roll; this was straightened by means of a flat ruler, just the same way as we straighten curled prints by means of the

back of a comb. The twelve-inch length was divided into two six-inch lengths. Each of these was then folded so as to make double strands of three inches. The doubles were twisted somewhat spirally to lengthen the period of the flame on ignition.

The lens-cap was removed and the dark-slide lid drawn out. We then took one end of the twisted ribbon in the teeth of a pair of pliers and ignited the other end by means of a lighted taper held just above the level of the lens. The flame from the magnesium lasts for a few seconds and is, of course, very brilliant. It is quite harmless. There is no flash or explosion. The ribbon burns silently with a yellow-white flame and has a very penetrating effect on

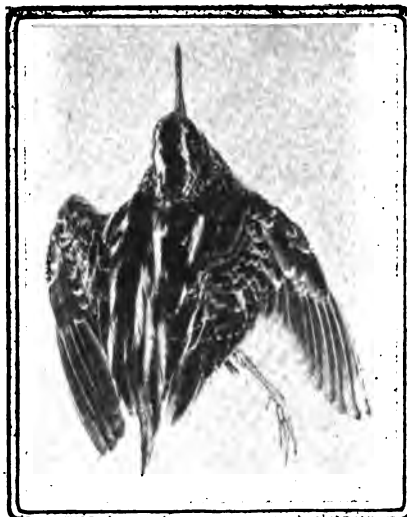


Photo.]

[J. H. Crabtree,

A wonderfully clear photograph of a snipe taken by magnesium light.

the object photographed. The light should be moved gently round the object, but must not on any account come within the field of the lens. Hold it about two inches above the level of the lens-mount. No blurred image is then possible.

Now take the other double three-inch length similarly twisted; ignite it and move the flame steadily round the object. By this method shadows, which would in daylight have been heavy and dark, are beautifully penetrated and we get a wealth of detail all over, which we cannot hope to obtain when one half the object is more or less in shadow. We can by means of magnesium ribbon illuminate the object where and how we please. This is the great boon of artificial lighting.

With twelve inches of the ribbon and the camera working at F. 11 we have a full exposure of an object about twelve inches from the lens.

What Plates should be used.

This is important. Slow plates are to be avoided. The contrasts would be too vehement. The blacks would be as jet,

and the whites as snow. This result would be useless. We want plenty of half-tone with fair—not excessive—contrast. Use special rapid plates (H. and D. 200) and let them be well backed. If you buy them ready backed they will be quite reliable and cost only a fraction more. The difference in the negative between a backed and an unbacked plate is sometimes most striking. There is nothing to lose by having a backed plate, and you may gain much.

Be sure to cover the camera well during exposure so that the glaring light from the burning magnesium may not reach the plate through the slide-lid or some small pin-hole in the bellows.

Provided the exposure has been near the mark an ordinary developer will suffice. I generally use pyro-soda for this class of work, aiming at all possible detail. The developer is made up thus:—

(A).—Pyro, 1 oz.; metabisulphite of potassium, 1 oz.; water, to 10 oz.

(B).—Washing soda, 2 oz.; soda sulphite, 2 oz.; water, to 12 oz.

For use take (A) 2 drs. (B) 1 oz. Water to 2 oz. (for $\frac{1}{4}$ plate), and add a few drops of rodinal. Keep bromide away altogether.

By the simple plan here described you may, when business hours are over, at any time you please, secure negatives of birds, moths, butterflies, grouped flowers, small plants, toadstools, etc., which will vie with those obtainable by daylight.

Our Photo. Competition.

RESULTS FOR JANUARY AND FEBRUARY.

The prize of one guinea for the best photograph sent in during January has been awarded to Mr. S. Smith, 19, Sherwood Road, Bearwood, Birmingham, for a snowy landscape taken at 10 p.m.; and the February prize goes to Mr. S. Sewell, Mount Pleasant, Hexham, for a clever study of ferrets.

Photographs intended for the March competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

The Use of "The Country-Side."—We look most eagerly every week for THE COUNTRY-SIDE. It gives great pleasure to our house, and is of great educational value where there are children who take an interest in birds and insects as ours do. Many a question they asked me I could not answer, and now I refer them to the back numbers of THE COUNTRY-SIDE.—Wishing you every success, I am, yours sincerely, (Mrs.) R. TAIT, High Street, Gatehouse, Kirkcudbrightshire.

IF YOU WANT TO BUY OR SELL
A CAMERA, TRY OUR SALES AND
EXCHANGE COLUMNS.

(See Back Cover.)

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to A. Shonk, Alma, Merivale Road, Harrow.

Why are fewer woodcock shot now than in former times?

The reason why fewer woodcock are shot nowadays is that most of the large sporting estates are preserved for battue shooting; and the coverts which woodcock haunt are only driven once or twice in the season. Then, in addition to the thousands of pheasants, a certain number of "cock" are always killed. As, however, the woodcock is a wanderer, "here to-day and gone to-morrow," only those are flushed which happen to be in the coverts at the time of the big battues. Formerly, when sportsmen used to shoot through the coverts for pheasants almost as regularly as they tramped the fields for partridges, the woodcock had no peace, and each new bird was almost certain to be flushed within a few days of arrival.

Why are pies into which an inverted cup is placed before baking more juicy than those that have no cup?

The heat of the oven rarifies the air in the cup and when the pie is cooling after baking the air condenses and occupies much less space than in its rarified form. This causes a vacuum in the cup, and the juice from the pie is sent up into the cup by the pressure of the outside air. While the pie is cooling much of the moisture evaporates, but the juice inside the cup is unable to evaporate and is thus preserved.

Why are children so fond of eating sugar and other sweet stuffs?

Besides food for building up flesh and muscles, we need also material for supplying the heat required to maintain the blood at normal blood-heat. This heat is produced in the system chiefly by the oxidation of carbonaceous substances, such as fats and carbohydrates (sugar, etc.). In children, especially young children, the digestive organs are not capable of dealing with any considerable quantity of fat, and therefore there is a craving for sugar and similar substances.

What is "blood rain"?

The phenomenon of red rain is witnessed from time to time in the South of Europe and is caused by the dust carried over from the African Continent by the strong winds that blow thence. This dust is composed principally of tiny particles of minerals of a red colour and these mixed with the rain give it more or less the appearance of blood.

Is there anything in the superstition which says that a death will occur when the "death watch" ticks?

Like all superstitions, there is no real reason for the belief. The "death watch" is usually heard in the spring, and according to the superstition someone must die before the year is out. As has been

pointed-out, those who hold such beliefs usually allow plenty of latitude in place and time for the fulfilment of the warning, and whether a person dies in the house or out of it in the room where the ticking was heard or in another room, whether they die in this country or in some far away land, the warning is supposed to have come true provided there can be made out some sort of connection.

Has war any effect upon the distribution of sharks?

Yes, as was shown during the recent Russo-Japanese war. But the effect is not that which might have been supposed. The sharks did not infest Eastern waters in greater numbers, attracted by the slain in naval battles, but swarmed in the Adriatic and other European waters. It is stated that the submarine explosions must have frightened them and that they came into the Mediterranean Sea *via* the Suez Canal. This, however, has not been proved.

Why is it that soldiers in battle frequently lose their hearing?

Sound is conveyed to the brain by the vibration of a delicate membrane in the ear, known as the drum. This is set in motion by the slightest vibration of the air in proximity to it. In battle there are tremendous concussions of the air produced by exploding shells; this causes so great a pressure upon the drum of the ear that it is ruptured and can no longer respond to the vibrations in the air produced by sounding objects, and hence the man is deaf. In firing guns on board ships on their gunnery trials the men put cotton wool in their ears to protect them from the concussion of the air produced by the explosion.

Do sparrows eat fish?

Mr. Aflalo has seen sparrows in Scotland frequenting the foreshores at low tide and eating the tiny flat fish in the small pools. It is interesting to remember that the Greeks had no other name for the Ostrich but that of "Big Sparrow," the voracity of the two birds being a common characteristic.

The "Derry Journal" of January 23rd published a long account of a farmer's house being wrecked the other day by stones and soot because he swept his chimney with a "gentle" holly bush. What is the Irish belief of the connection of fairies with hollies, and why is the bush called "gentle"?

Why does the fat which rises on water in which mutton has been boiled, separate or divide into portions, which, when cold, resemble small, thick, round peppermints? Why does it not always form a smooth, firm, compact surface?

When was mahogany first employed by Europeans?

What are solar halos, and how many kinds are seen?

Has silk ever been as valuable as gold in England?

Why will not a Jew's harp produce loud sounds unless the instrument is applied to the mouth?

Why is it, that although at first touch sheets feel colder than blankets, after they have acquired warmth from the body they feel warmer than the blankets?

Week's Wild Life in Pictures.

(See page 261.)

AMONG the nests which may occasionally be found early in March is that of the blackbird (1), stocked with eggs of a pale sea-green thickly freckled with light reddish dots. It is very rarely found so early as the nest of the song-thrush, probably because the latter builds more in sheltered niches and on ivied stumps, whereas the blackbird is almost always a bird of the hedgerows, which are leafless now. When, however, a sheltered nook is found among densely-matted twigs the blackbird is not afraid of facing Fortune in March; and I have even found an egg in February.

2. March is the month of winds; but let us hope that this March will not give us the tree-shattering storms which passed over the North of Norfolk on this day a few years ago. This snapshot, taken in an interval of sunshine during storm, shows what havoc it played with such easily-broken trees as black poplars and willows.

3. The Shoulder Stripe is a typical moth of March, fluttering along the hedgerows on mild evenings. It is not difficult to identify, its colour being deep reddish umber, paling to buff in the middle of the wings. The picture shows the dark shoulder stripes from which it is named; but its most characteristic mark is the minute whitish spot near the middle of the outer edge of the front wings. This is seen more plainly in the female (the lower figure) than in the male usually; but it is always there. It lays its eggs on the dog-rose.

4. The Brussels Lace Moth will appear in July, but its caterpillars are now emerging from their hiding-places to feed upon the lichen which grows upon old twigs, park palings, etc. Both the moth and its caterpillar are greenish grey, with numerous dark markings, which make them closely resemble the lichen. In this picture one of the caterpillars—underneath the ends of the left-hand twig—shows very plainly in the strong light; the other is on the left-hand side of the upright twig, just above the large piece of pale flat lichen. This gives little idea, however, of their wonderful protective colouring.

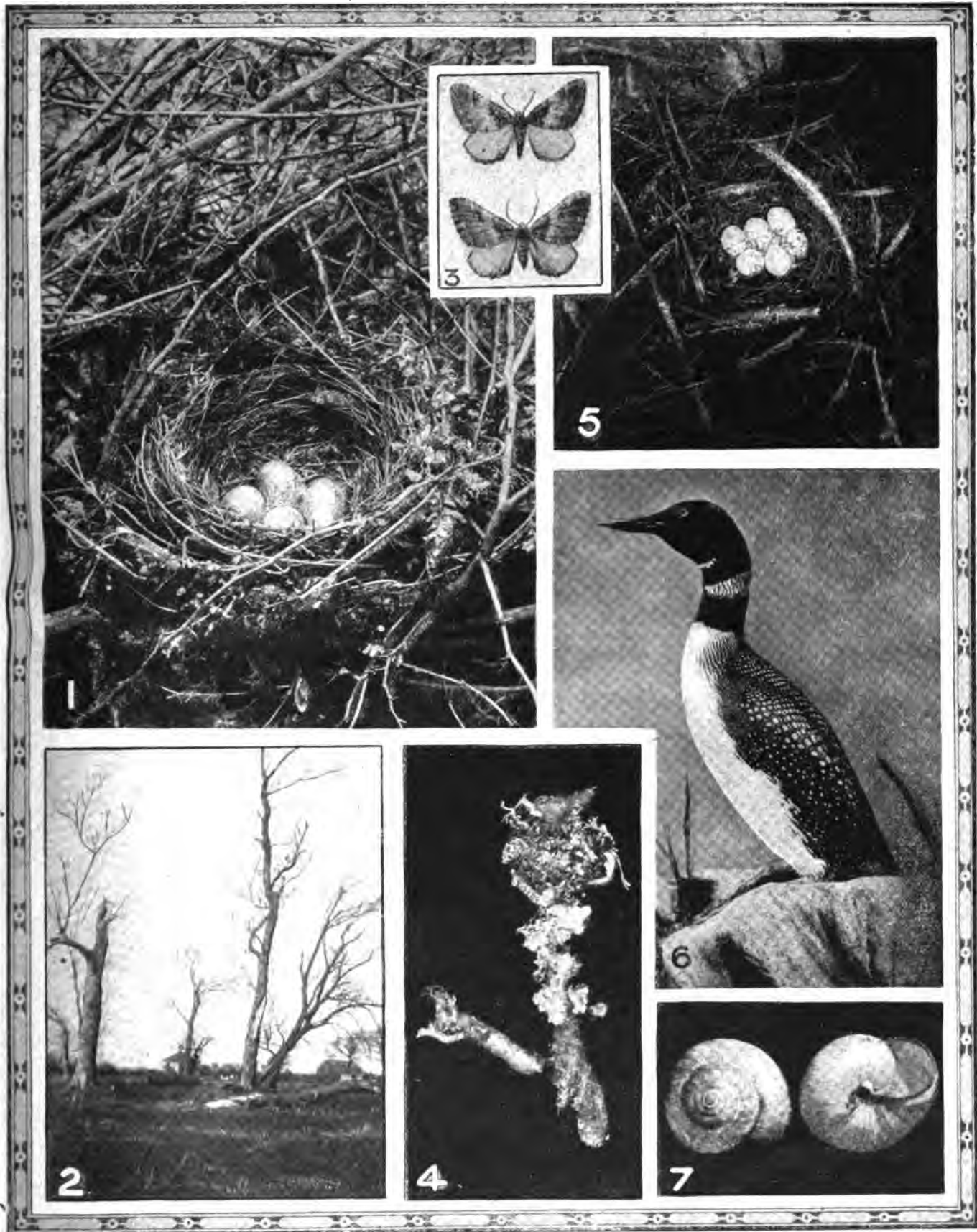
5. Although the sparrow-hawks are now returning to their nesting-homes, giving occupation to the guns of game-keepers in woodlands where they halt by the way, this picture was included prematurely in this week's Wild Life, because six weeks will elapse before you may expect to find the nests filled with eggs. Before then, however, it is worth while to watch the sparrow-hawk's nesting-site, because there is some difference of opinion among field-naturalists as to whether this bird ever adopts without alteration the old nest of some other kind. I have never known a pair which did not build their nests, partly or wholly, for themselves.

6. According to some accounts, the very large bird which was seen for three days on the top of a factory chimney near Newcastle was a Great Northern Diver (other witnesses say that it was a heron); but in escaping the seven shots fired at it, the bird was more lucky than are most of the divers, which come to our coasts in winter, and are now moving northwards to their distant breeding-haunts.

7. The Carthusian Snail, whose shell is represented here four times the natural size, is so-called from having been first found in the neighbourhood of a Carthusian monastery. It has only been definitely recorded from three counties of Southern England, namely, Sussex, Kent, and Surrey, where they abound in great numbers on the Downs, and are now coming out of their winter quarters. The shell is of a whitish horn colour, with a milk-white spiral line just above the middle. When the snail moves it carries its shell in a slanting position.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 260.)



1. Early Nest of Blackbird, *Merula merula* (J. T. Newman). 2. Effect of March Winds on Poplars and Willows (E. K. R.)
 3. The Shoulder-Stripe Moth, *Anticlea badiata* (A. E. Tonge). 4. Two Caterpillars of the Brussels Lace Moth, *Cleora lichenaria*, on lichen (Rev. S. N. Sedgwick). 5. Nest of Sparrow Hawk, *Accipiter nisus* (W. Wilson) [Note: This nest is not usually found with eggs until May.] 6. Great Northern Diver, *Colymbus glacialis*, stuffed (G. Parkin.) 7. Carthusian snails, *Helix cartusiana*, magnified four times (J. C. Varty-Smith.)

Live-Stock for Profit and Pleasure.

The London Hackney Show.

THE Annual Hackney Show was held last week at the Agricultural Hall, and eclipsed all previous records as to number of entries, and the quality was pronounced to surpass the standard of former years.

His Majesty the King is patron and a past president of the Society, and was this year an exhibitor. Many previous winners of champion honours were again well to the fore. On Tuesday, the opening day of the show, the most important feature was the judging of the stallion classes, which have this year attracted an increased entry.

Class 7, for stallions of five years and over, was considered to contain the grandest array of animals, and, in this well-filled class, Administrator, the champion of 1903 and 1904, and first for harness champion in 1906, was the winner.

In class 8, for stallions of five years and over, the veteran champion Rosador, 15 years old, received quite an ovation from the crowd. He showed more fire, as he was led round the ring, than many of the two-year-olds.

The stallions in harness, tried for the first time in England at the show in 1905, and continued in 1906, have been so successful that they will probably remain a feature of the London show. The strides that the Hackney breed has made in this practical direction during the past ten years have been great, indeed. The hackney is now recognised in the markets of the world as the harness horse par excellence for style, grace, courage, and action.

Immense sums are annually expended in this country by American and Continental dealers who require the best type of carriage horse for their wealthy customers, and to the hackney breed alone all turn to supply this insistent demand. A feature generally remarked on by foreign horsemen is the unexampled record for soundness to be found in the hackney breed.

It is worthy of notice that the catalogue of this year's show gives particulars of over 151 horses for sale.

DOGS.

A JOINT show of the Great Dane and the Borzoi Clubs has just been arranged to take place at the Crystal Palace on April 25th, and the management is in the hands of Mr. Ernest Fox and Mr. H. R. Dawson. This should prove a most interesting fixture to all lovers of big breeds, and as the Dane and Borzois are handsome in type and varied in colour and markings, the display cannot fail to make many new friends for these companionable dogs. Her Majesty the Queen, it is stated, will send some exhibits.

The Pomeranian Club, anxious to specialise itself and show its remarkable numerical strength, purposes to hold a show by themselves, and there is little doubt but that it will be the toy show of the year, as the lovers and owners of Pomeranians far exceed those of any other variety, not excepting the King Charles spaniel.

A new rule has been added to the existing rules of the Kennel Club, which enacts "that dogs are disqualified for exhibition which have been imported since January 1st, 1907, in contravention of the regulations of the Board of Agriculture under the Importation of Dogs Order." This shows an amicable working of the Board with the K.C. likely to do much good.

POULTRY.

Mistakes in Hatching.

By "CHANTICLEER."

I HAVE in previous notes given advice on obtaining fertile eggs and will supplement these by pointing out the numerous mistakes which occur in the hatching and brooding of chickens, especially when we consider the many makes of incubators and brooders on the market, and the strange positions in which they are placed.

First, let me express my opinion that small or medium sized incubators or brooders are decidedly preferable to large ones, in a similar way to small flocks of chickens or poultry succeeding infinitely better than larger ones.

Locality has much to do with success in hatching, and here uniformity of temperature and freedom from vibration are most important. Ground floor, or better still, cellars, are excellent for hatching by machinery, for there is generally humidity or a predisposition to moisture in buildings below the ordinary ground level.

On the arrival of any incubator it should be tested carefully and its temperature ascertained, for in these days of good thermometers few mistakes can then take place. Hatching eggs to produce healthy, vigorous chicks that will thrive and grow demands certain methodical ways from which no deviation is permissible.

A stone or concrete level floor is preferable to wood or first storey buildings. One of the cardinal secrets of successful hatching, whether by machine or hens, is—new laid eggs, and if poultry keepers would bear this in mind fewer failures would be found.

All eggs for incubation should have twelve hours rest before being placed in the machine to allow of the germ settling properly. If these essentials are neglected the best incubators will not avail.

Do not use either extra large or very small eggs in the same egg chamber, but select those of an average size, also eggs with smooth, even shells in preference to thin, rough shells. Remember that eggs part with much of their moisture before they can be hatched, and that the egg chamber demands a certain quantity of moisture, or the drier the air outside the egg chamber the more is required inside, therefore we must watch the humidity of the atmosphere in the hatching room.

Cooling the eggs is an essential and important daily operation, which, if neglected, will prove one of the greatest of mistakes. Much airing in cold weather is, of course, injurious, but, on the other hand, too little in hot weather is a mistake, for the embryo chick demands oxygen and, indeed, must have it to enable it to grow and hatch properly. I may compare an embryo chick to a hot house plant, which grows stronger when it receives fresh air in the correct proportion.

Very many poultry breeders forget that

the shell of an egg is full of small air cells through which the embryo chick breathes, and if closed by dirt or soiled in any way and the cells become sealed up, dead in shell is the immediate result.

When hatching day approaches I always advise sluicing the floor of the incubator room with water to give the necessary humidity, which is more needed on hatching day when the eggs are "pipping" than at any other period of their hatch. Do not allow, however, the heat to cool down at this time, but watch the thermometer does not register more than 103 degrees or less than 102 degrees amongst the live chipping eggs.

The live chicks need not be removed from the egg chamber until they begin to pant or become overcrowded, especially in cold weather when their removal will affect the temperature of the remaining eggs, and I should add that the moisture which arises from wet chicks is almost necessary for the success of the complete batch.

In respect to brooders there is always danger to avoid in overcrowding, and for this reason small brooders are always preferable to large ones.

Freshly hatched chicks should always be kept in a temperature of 90 to 98 degrees for the first twenty-four hours after leaving the hatching machine, and until this period has nearly expired, say, sixteen to twenty hours, no food of any kind is necessary, for Nature has wisely arranged that before leaving their prison cell they shall absorb the yolk of the egg, on which pabulum they are able to subsist, and, in fact, thrive better than when forced with food immediately they make their *début* into the world.

For the first few meals boiled egg, finely chopped, should be their staple diet, and when this is given at intervals of two hours little else than warmth is needed. The young fledglings must not suffer from want of fresh air, neither must they be exposed to draughts, therefore watch the ventilation.

CATS.

NOTHING needs more careful attention than the diet of very young Persian kittens. It is no exaggeration to say that all disease (apart from outside or accidental causes, such as draughts, contagion, etc.), is, in the first place, set up by undigested food, and even what may be called external causes, would often not be harmful to an animal if the digestive organs were in proper working order.

Remember, it is not the quantity of food a kitten takes that benefits it, but the quantity it digests. A kitten should only digest certain things in certain proportions, and whatever remains undigested produces irritation, and in this case a kitten cannot possibly develop, and is generally weakly and fretful. There is a great knack in teaching young kittens to feed themselves.

When they are about three weeks old it is best to try and get them to lap some milk and warm water two or three times a day, letting them also feed from their mother.

A shallow plate is better than a saucer, for then the mites can dip in their mouths without getting out of their depths!

It is curious how stupid some kittens are in making the start towards independence in feeding, whilst others in the same litter quickly master the difficulty of lapping on the surface only of the liquid.

Some are taught better if the milk is held to their mouths in a spoon. A little later on Mellin's or Bengel's Food, made thinly, can be given. It is not advisable to give young kittens meat until they are over three months old. For one reason, if they get a taste for flesh, they turn up their noses at other more nourishing food.

Loss of life amongst Persian kittens is often traceable to strong food given at too tender an age. In order to train a kitten to be clean a shallow tin of dry earth or sawdust should be provided for it.

If, however, a kitten has unfortunately acquired dirty habits, it is useless to beat or shake them; it is best to watch them, and put them into the tin and gently stroke and coax them with patience into good habits. The lesson once learnt is seldom, if ever, forgotten, for cats are naturally most cleanly and particular animals.

Those who have never cared for cats will be interested and amused if they bring up a litter of lovely little Persian kittens, which may be a delight to the eye and a help to the purse.

CAGE BIRDS.

As already pointed out, the amateur canary-breeder generally errs on the side of mating his birds up too early, and thereby unwittingly courts failure with the first round of nests. Nor is this the worst result, for in many instances the birds are upset, and do no more good for the rest of the year.

Many fanciers of the old school will readily assure you that the proper time to mate up is on or about St. Valentine's Day, because it

was formerly commonly believed that wild birds paired themselves on that day. Of course, this is purely a superstitious belief. The beginner will be very well advised to restrain his desire to commence operations until towards the end of March or the beginning of April.

During the interval between now and the time for mating up one need not be idle. There is plenty to occupy the hands and the mind meanwhile. Not the least important of these matters is the close study of the birds one wishes to mate, in order to ensure as perfect a balance of points as possible in each respective pair. This balancing of points, aided by a knowledge of the birds' pedigree, and of the individual's power to transmit to its offspring any particular characteristic which it possesses is in reality the royal road to success in breeding high-class varieties of fancy canaries. It is, so to speak, the Alpha and Omega of the breeder's art. To go into all details respecting the typical points of canaries only would occupy far more space than can be given here, and in a few cases the novice would require some little experience before he began to grasp clearly some of the subtler points in a given bird.

As every variety of canary has a definite standard of perfection and scale of points drawn up in its favour for the guidance of breeders of each variety to which anyone may refer at will it will suffice to give a brief summary of the points of the Norwich variety, which is one of the, if not actually the, most popular breeds of to-day. It is essentially a bird of colour, which should be deep, even, and rich throughout. In shape it must be a short, chubby bird, wide across the back, well filled in at the base of the neck, and with a broad, full chest, the neck short and thick, and head round and full, finished off with a short and stout beak. The wings and tail must be short, and the tips of the wings must not cross over each other. The whole bird must be neat and compact, with just a leaning towards stoutness rather than thinness, and not more

than 6½ inches in length from tip to tip. The plumage must be close and compact, and soft and silky, to the touch. Such are the essential features of an ideal bird of the Norwich breed.

In mating up the birds, it is necessary to keep these essentials well in view, and to select the pair so that the two birds will possess between them as complete an array of typical features as possible. Any defects in one should be compensated for by extra good quality in the corresponding features of the mate.

Thus, to adhere to the above example, in mating Norwich a bird that has a thin neck or pinched head should be given a mate that rather errs on the side of having these features over-developed; a long tail and wings should be counter-balanced by others which are too short; or a bird of good quality but too small in stature should be mated with one that exceeds the limits of 6½ inches imposed by the standard of perfection.

Poultry Organisation.

No. 1 of the Journal of the National Poultry Organisation Society promises to do solid work for the cause of profitable poultry keeping in Britain. Dwellers in the country who, either as interested themselves in poultry as a branch of agriculture, or desirous for the public good to help their poorer neighbours to make poultry keeping pay, should get a copy (price 6d.; Simpkin, Marshall and Co.) of this journal and endeavour to extend the organisation of the society in their neighbourhood. Apart from its organising work and the statistics which it contains, the journal gives many useful facts and hints. With regard to white stock, for instance, it notes that in Hungary almost all the turkeys reared for market are white; and why?

"DAILY MAIL."
The Naturalist's Daily Newspaper.

WHAT IS IT ?

The Results of Two Competitions.

£3 Awarded.



Magnified Hairs of a Cat.

THIS week we are able to give the results of two of our What Is It Competitions. In the first place we can now give the names of the prize winners in the first Competition. It will be remembered that more than 1,000 competitors rightly named the photograph in our issue of February 2nd as "portion of a loofah," and for these we organised another skill contest. On page 220 of THE COUNTRY-SIDE for February 23rd we published three enlarged photographs and invited those who named the loofah correctly to try their skill for a final result.

The photographs represented (1) a piece of the paper on which THE COUNTRY-SIDE is printed, (2) part of the type in the heading, "Can Animals Think?" (page 155), and (3) part of the section of a cigar.

Nobody correctly named the three objects, but four readers who have been adjudged equal in merit, stated that No. 1 was a torn piece of paper, and No. 2 part of something printed in a paper. The £2 prize has therefore been divided equally among the four competitors and they will each receive 10s. Their names are:—J. E. Farmer, Blelsae, New Road, Mitcham Junction; Percy Norris, River Mill, Dukinfield; Edna Suckling, 25, Firsby Road, Stamford Hill, N.; R. Hynds (aged 10), 13, Olive Street, Romford. We congratulate them all, particularly our young competitor.

In the What Is It? for February 23rd, the prize of £1 has been awarded to C. H. ROSE Ethandune, Parkside Gardens, Wimbledon Common.

who described the photograph as:

"Cat's fur magnified, the thicker lengths being the long hairs which form the outside of the animal's coat, and the thinner being the downy hairs nearer the skin."

This was exactly correct, and we congratulate Mr. Rose upon his skill.

Other competitors said hairs of a cat, but Mr. Rose's was far and away "the most definite description." Many readers thought the photograph showed hairs of some kind, human, mouse's, dog's, rat's, etc., being all very popular. Perhaps the most curious solution was that of a reader who wrote "A ship's rigging." As the photo was stated to be magnified it would have had to be a very small ship.



The Cat from which the Hairs were taken.



Work for the Week.

Under Glass.

GIVEN sunshine many plants will be delighting the gardener by commencing to grow in earnest after their winter's rest. The month of March is not without its peculiar anxieties. Bright sunshine, accompanied by a bitter wind, forbidding the giving of much air, and followed by frosty nights form a combination apt to cause considerable difficulty in the regulation of greenhouse temperatures. As sudden great rises in temperature are most injurious in sunny weather, therefore fires should be kept very low in the daytime. Shading may have to be resorted to, but this should be done as little as possible so early in the year. Watering will demand very careful attention, for seed pans in particular will dry up with quite amazing rapidity and with disastrous results.

Those plants which grew vigorously last summer must now be re-potted in preparation for their coming season of growth. A good start in spring means much to them, and in giving root-room in fresh soil, a genial temperature, cleanliness, and the avoidance of overcrowding, are all highly important factors.

As it is important that it should be in the right condition as to moisture, it is advisable that the potting soil should be prepared before the day it is actually required. Potting is commonly work for a wet day, and nothing is more unpleasant than to have to get in the requisite materials during heavy rain.

Not forgetting that many plants possess special requirements, notably peat, turfy loam which has been stacked for a year, leaf mould, and coarse sand, will in general form the principal constituents of the potting soil. Stable manure must not be freely used, and we do not consider it advisable to incorporate chemical manures with the compost.

New pots should be soaked in water before use, and old pots must be scrubbed. Potting is at once one of the most important and the pleasantest operations in gardening. It is also an art which cannot be learnt in a day.

The Flower Garden.

Shrubberies which were forked over during the winter should now be hoed or

raked over. Beds containing bulbs or other spring-flowering plants should receive similar attention, with the addition that a top-dressing of fine soil, sand, or cocoanut fibre may be found desirable to give them a neat appearance. Plants on the rock garden will require to be made firm if they have been loosened by the recent frosts, and a top-dressing of fine soil containing plenty of grit will here be beneficial.

Slugs will everywhere have to be guarded against; a look round at night with a lantern should reduce their num-

Those rambling sorts that do not require a regular pruning may, however, now receive attention. In their case the oldest branches should be completely cut out to encourage the more vigorous younger ones.

Beds of roses may be cleaned over, and where there are no plants or seeds sown beneath them, they may be advantageously mulched with manure.

G. T.

A Spineless Blackberry. An Interesting Novelty.

THIS is a far greater novelty than a white blackbird or a thornless cactus, for although the common bramble does vary in all sorts of ways its vagaries had never resulted in the development of a sport possessed of neither spine nor claw until this variety *inermis* sprang into existence, how exactly we do not know.

Here it is, however, shoots, leaves, flowers, and berries, all of the familiar style, but not a trace of a spine on any part of it. What a pity it is for the boys that all the blackberries of the copses, hedges, and commons cannot

be grubbed up and replaced with this sensible sort; there would be no torn clothes and scratched hands when one helped himself to the wayside refreshment of luscious blackberries. We have known this spineless fellow at Kew for years, have even stolen fruit from it, and can recommend it for its good behaviour.

It is nothing more than a sport from *Rubus fruticosus*, of that we are assured, and we hope it will be taken in hand by those clever people who know how to turn crab apples into ribstone pippins.

"Field Botany."

THIS is a little book intended for educational use in field work. The first chapter deals with the influence of soils in vegetation, the second with the types of plants to be found in areas of different kinds, and the third with the commoner plants of the various natural orders. The book is interleaved throughout with blank pages—of rather transparent paper, for writing on both sides—for the student's own notes. It may be found useful in schools where botany is made a speciality. "Field Botany," by Charlotte L. Lawrie—Allman and Son, 1s. net.

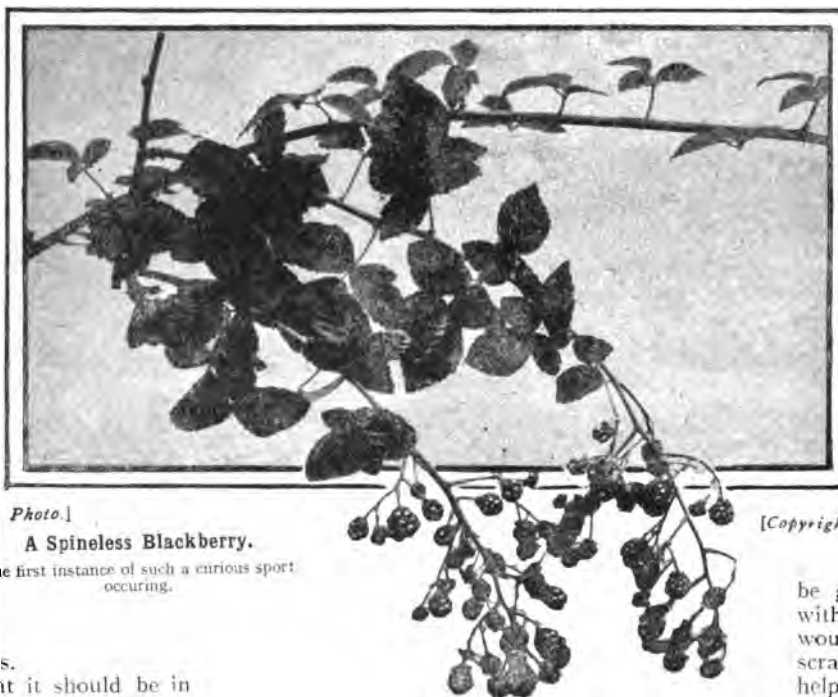


Photo.]

A Spineless Blackberry.

The first instance of such a curious sport occurring.

[Copyright.]

bers considerably. Snails, which so abound in town gardens, may be found under projecting ledges of wood, etc., during the day.

The loose shoots and straggling leaves of ivy should now be removed. This is better done with a sharp knife than by a haphazard clipping. Other climbers will need fastening up and the removal of old and superfluous wood. In some cases it will be better if generous loops of tarred twine are employed in place of the familiar nails and shreds of cloth. In any case ample room must be allowed for the young shoots to swell.

Roses.

These may still be planted, but it will very soon be too late. It is a common error to prune roses at, or even before, this date; except in the most favoured districts. Rose pruning should not be performed until April is in. The reason is that pruning encourages early growth, and should this be smitten by severe frosts the consequences are disastrous.

The Garden.

Fashion in the Garden.

THE immense enthusiasm felt for the carnation in America seems to be reaching this country; it is even suggested that the carnation may succeed the chrysanthemum as the most popular winter flower. Whilst it is unlikely that the latter will ever come to be but little grown, this fate actually has befallen plants which were at one time exceedingly popular. The pelargonium, once quite the rage, is nowadays but little heard of, and what are termed stove plants were decidedly in vogue a few years ago, but they have lately declined greatly in favour. In the broad matter of garden design and policy also, methods greatly change with the times. What will be the predominant gardening style of the future? We do not care to prophesy further than to say that it is our belief that for some time to come that which is known as the English or natural style of gardening, and more particularly the later development of wild gardening which consists of placing plants in places and under conditions where they will take care of themselves will continue to grow in favour.

As a possible future competitor there may be instanced the interesting, and in its way effective, Japanese style. In this the plants exist for the garden, not the garden for the plants. The garden is designed as an imitation of landscape, yet it is utterly unlike an English garden. So-called Japanese gardens do exist in this country, but these are not the real thing.

Whilst we do not predict that the Japanese style of gardening will ever become popular in other lands, it certainly does usually very favourably impress the tourist, and it is also interesting to note that a real Japanese garden was the outstanding success of the great exhibition recently held at St. Louis.

Labelling.

It is almost the rule to neglect this important matter, and the consequent crop of bewilderment is apt to be a very heavy one. It is particularly the amateur who sins in this respect, and as he is rarely possessed of as wide a knowledge of plants as is the professional gardener, he is all the more ill-advised to do so.

Whilst holding a label to be rather a blemish on a plant, and that despite its educational value, we are not in favour of labelling in private gardens after the fashion of a botanic garden. There are undoubtedly departments of the garden in which thorough labelling should be made an invariable rule.

Now is the great season of seed sowing; see it to, readers, that every row and pan of seeds has a label attached. For this purpose ordinary wooden labels, over the writing surface of which a little white paint has been rubbed immediately before use, will suffice. As it is the lower part which will first perish it is important to write from the top of the label downwards, and it is as well in all cases to add to the name the date of sowing. The practice of merely placing the empty seed

packet in a cleft stick at the end of the row, to be humorously wafted away by the first gale, has nothing to recommend it at all.

As probably the majority of gardens possess fruit trees of which the names are hopelessly lost, the labelling of fruit is even more important. Indebly stamped suspended metal labels are the best for trees, and in the case of fruit initials should commonly be sufficient. But even stout wire rusts through and breaks in time, and if entirely left to itself it eventually will be found to be deeply buried in the wood.

A. G.

Abies Nordmanniana.

THIS is one of the best of the silver firs for planting in the gardens and parks of this country, or rather in those where the soil and atmosphere are suitable for these somewhat fastidious conifers.

In the gardens of Ireland they are particularly happy, and it is evident from their behaviour in these islands generally that the essential conditions are a deep soil, plenty of moisture, and a pure atmosphere. *A. nordmanniana* inhabits the high elevations of Asia Minor, where it forms a tree 150 feet high with a trunk six feet in diameter. The branches are short, flat, and regular, so that the tree is quite pyramidal in outline, and they are crowded with dark shining green leaves.

The cones are narrow, six inches long, erect, and coloured dark brown. It was introduced into European gardens about sixty years ago and soon found favour with lovers of conifers; still it has not yet become so popular as it deserves to be, not only as an ornamental tree, but as a source of ultimate profit from its timber, which is said to be of very high quality. The severest frosts experienced in this country have not affected it.

Crisp-Edged Begonias.

SOMEONE writing recently on favourite garden flowers deplored the popularity of tuberous begonias, calling them an empty exclamation in colour, ugly in form, without scent, and devoid of elegance of any kind, either in habit, foliage, or flower.

A bed of begonias is not, he said, to be compared for charm with a bed of verbena, of fuchsia, or of scarlet geranium; whilst a tuberous begonia in a flower-pot is often uglier than a cactus. Without going to this extreme we are disposed to agree that big, flat, plain, single-flowered begonias are not beautiful; they have colour, but no other charm.

The double-flowered varieties are good to look at, but they are not easy to grow. There are few more beautiful begonias than the oldest of the tuberous section, *B. boliviensis*, which most gardeners have discarded for the bigger flowered seedlings. A German nurseryman, W. Pfitzer of Stuttgart, has bred a race of these begonias, which is a decided improvement in flower form, the edges of the petals being elegantly crisped and wavy. He has them in all the begonia colours, and both double and single-flowered. They are cheap, the tubers being offered at 40s. per 100.

Garden Queries Answered.

Bud Variation.—In the garden of some friends at Cape Town there is an oak tree which is supposed to have been planted about 250 years ago. For the past twenty-five years one particular branch has produced leaves which are perfectly white, notwithstanding the fact that it has plenty of light. Although I know several botanists, I have been unable to obtain an explanation from any of them as to the cause of this peculiarity, and shall, therefore, be glad to know through the columns of your journal if you can give any explanation.—I. FLEMING, Peckham.

[Bud variation is not an uncommon occurrence among cultivated plants, but the actual cause has not been ascertained. It is due to the same law or force as all other forms of variation, whether it be in seedlings or mature plants. Gardeners have obtained and perpetuated many good "sports" which originated by the breaking away, as it were, of a bud from the normal character, and assuming some new form or colour. Some of our best fruits have been obtained in this way. The white-leaved branch on the oak tree described will, no doubt, continue to grow as long as the tree lives. There is a large oak tree at Kew, near the pagoda, which has a cluster of white-leaved branches growing from the trunk about half-way up, whilst all the rest of the branches are green-leaved. All attempts to raise white-leaved oaks from this branch by grafting have failed, no doubt because the leaves are wholly white; had they been only partially so there would have been no difficulty. You will find an interesting chapter on this subject in Darwin's "Variations of Animals and Plants," Chapter X.—Ed.]

Spraying Fruit Trees.—I hope you will let us know later the result of the experiment of spraying fruit bushes as a preventive of bud destruction by birds (mentioned on p. 208 of No. 92, Vol. 4). My garden suffers dreadfully from their ravages. It is not bullfinches, I know, nor tits (I think), as I once believed, but house-sparrows, for I have watched them at work. I tried washing with paraffin and soft soap, and sprinkling with soot, but all to no purpose, and have now protected what's left with nets. A very similar prescription was recently given in *W. M. News* for winter washing of fruit trees to get rid of insect pests. Would not an addition of quassia chips have added to the efficacy of the solution?—H. T.

[So far, the sprayed bushes and trees have not been molested by birds. Quassia would do no harm, but we have not thought its addition to the mixture worth while.—Ed.]

Poisonous Plants.—A paragraph in the daily press to the effect that a death has resulted due to poisoning set up by a Michaelmas daisy is certain to make many unsophisticated people wary of this entirely harmless plant. No doubt, what really occurred was that blood poisoning supervened in a wound originally caused by contact with the sharp stub of a Michaelmas daisy stem cut down after flowering, but this would be even more likely to occur after contact with a nail or other inanimate substance. The number of plants really poisonous by contact is, fortunately, exceedingly small. The Poison Ivy (*Rhus Toxicodendron*) and allied species *Laportea*, and rarely *Primula obconica*, are, in fact, the only ones at all met with in gardens. These, again, are only harmful to some people, but when it results the poisoning, though not dangerous, may be decidedly severe. It is not generally known that skin trouble is apt to occur after much handling of the cut-flower stems of narcissi. Should the juice from these penetrate into minute cuts what appertains to a mild form of eczema will result.—G. T.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

THE advent of the young eland, though not an out-of-the-way event, at the Gardens, deserves notice; but, pretty as the little fellow is, he will find himself hopelessly put in the shade by the charms of the pair of young hippopotami just acquired. They are, like the youthful specimen that was there before, wild-caught animals, and are also quite small. The three infants have not been put together as yet, but no doubt this will be done presently, and it ought to be an amusing spectacle to see the three playing together in the tank—for I suppose little hippos. do play, like other young things.

In the Western Aviary will now be found a specimen of the buff laughing kingfisher (*Dacelo cervina*), a species which has very rarely been imported. I have only seen one other specimen. It has a close general resemblance to the well-known laughing jackass in size, habits, and some points of colour, but differs strikingly in its buff breast and in the large amount of rich sky-blue on its wings, the ordinary bird having the wings only faintly washed with pale silvery blue. In the buff species, also, there is a sex difference which is not found in the other bird, the tail being blue in the cock and barred in the hen. The



Photo.]

[W. S. Berridge, F.Z.S.]

The Long-tailed Goral.

common great kingfisher has the tail barred in both sexes, and the only difference is a faint blue patch on the rump of the male. The buff laughing kingfisher is not so widely distributed in Australia as its relative, being confined to the north-west portion; it laughs, but with a different tone from the common species.

Three pairs of bearded reedlings are at present lodged in this aviary, but no doubt will be ultimately located elsewhere. It is always interesting to see this local and little-known British bird in captivity, as, in addition to its beauty, it has several interesting habits; for instance, it both walks and hops, and is unique among British birds in exhibiting the same fondness for caressing and cuddling up to its mate which is so familiar in such foreign birds as love-birds and waxbills. The present specimens are imported ones, a limited number of such being brought over from the Continent every winter; of course, no one ought to capture British individuals. Another British bird which is not often available for study at close quarters—although in this case a common one—is the dabchick, of which there is now a specimen in the aviary in the Fish House.

In the Reptile House the young axolotls continue to thrive, although they have been somewhat reduced in number by the more ad-

vanced specimens eating their little brothers; and there is now a fresh lot of spawn on view, beautifully showing the development of the enclosed tadpoles. This spawn was produced by a white female, her mate being black. I hardly expect the young ones will be pined, however, as I never saw a pined one.

Two specimens of a curious snake, the *Bucephalus capensis* of South Africa, have been recently added to the collection. This species has the curious habit of inflating its neck, and is poisonous to some extent. The present specimens, about a yard long, are brown, but green varieties occur.

The photograph illustrates the long-tailed goral, alluded to in my last notes.

Answers to Correspondents.

Injured Claw.—Sorry I do not know anyone near you who could properly attend to the canary's claw. Why not show it to your medical man, who would doubtless remove it if necessary. It is quite a simple operation. Of course, a veterinary would properly attend to it as a matter of business.—(to Miss S. MATTHEWS, East Greenwich.)

Rook Chased by Sparrows.—As the nesting-season approaches, it is common to see large birds, especially house-pigeons, furiously chased by sparrows. It is the natural instinct of a bird to defend the vicinity of its nesting-site; and by flying behind the rook the sparrow runs no risk.—(to C. WYNNE ROBERTS.)

Chaffinch on the Road.—This habit of preceding you along the road by snort flights is shown also by yellow-hammers, hedge-sparrows, thrushes, etc., especially in hard-weather, when they are intent on feeding. Instinct does not tell them that you will overtake them again and again.—(to J. F. G. FOSTER.)

Protected Birds.—The list of protected birds differs in different counties. You can see the latest orders for your county at any local police station, or obtain a copy from Messrs. Spottiswoode, The King's Printers.—(to A. F. BAYLIS.)

Fox-Moth Caterpillar.—If your caterpillar is still alive it will presently come out, and want fresh food; but it is very unlikely to have lived through the winter, unless it was kept out of doors under natural conditions with growing plants.—(to W. E. TAYLOR.)

Supposed Redwing's Egg.—There is no egg more variable than a blackbird's; and the fact that your specimen resembles a redwing's is of no significance.—(W. E. TAYLOR.)

Frog in Tree Stump.—The explanation probably is that the finders of the frog, after the bark had been broken off, were not able to locate the narrow crevice between the dead bark and the dead wood through which the frog had crept into its hiding-place.—(to J. SHARP.)

Redwing in London.—The bird like a thrush, with orange-red on its flanks and under its wings, and a pale stripe over the eye, was a redwing. The hard weather drove these birds into the cities.—(to OLIVE FRANKLIN.)

Supposed "Little Gulls."—The small gulls which swarmed in Portsmouth Harbour were not Little Gulls, *L. minutus*, but Black-headed or Laughing Gulls, *L. ridibundus*.—(to P. A. N.)

Frogs, Toads, and Newts.—All of these leave their winter quarters in spring, and betake themselves to some still water for breeding purposes, when they are easily taken for the aquarium. It is more interesting, however, to take some of the eggs and rear the tadpoles through their various stages.—(to E. H. ROTHWELL, B.E.N.A.)

A "Mended" Orange.—The curious gap in the skin of the orange sent, healed over, as it were, with a patch of thinner skin, was not, I think, caused by a cut, unless this had been carefully made with a penknife from stalk to apex. More probably, the rind mere'y cracked as the fruit grew, and a new skin formed over the wound.—(to M. E., Bodmin.)

B.E.N.A.

(British Empire Naturalists' Association.)

Special Advantages for Members.—Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street, and 223, Oxford Street. Messrs. Harman and Sons, hatters, 87, New Bond Street, W., allow a discount of 5 per cent. to B.E.N.A. members.

B.E.N.A. Fund.—This little fund exists for the purpose of defraying such small items of expenditure as are inevitable in the working of a large association which charges no fee for membership. Amount previously acknowledged, £15 9s. 5d. Since received, 1s. 6d., "X"; 1s. 10d., W. H. Davis; 6d., H. E. C. Willick. Total, £15 13s. 3d.

Schools' Mutual Aid.—SUPPORT FROM COUNTY COUNCILS.—I was lately able to announce that we were practically assured that all postage expenses in connection with this scheme, so far as London schools are concerned, would be defrayed by the London County Council; and now I am glad to publish the following very satisfactory letter from the Director of Education under the Warwickshire County Council (in which county the first experiment of linking a country school with a London school was made) to the Hon. Cordelia Leigh, who is so ably conducting the scheme to success:—

"Dear Miss Leigh,—

"You will be glad to know that my committee have decided to pay the carriage of parcels for exchange of nature study objects and have told me to send particulars to all schools in their area recommending them to adopt yours or some similar scheme. I hope the result will be that you will have a good few letters from teachers.

"Yours faithfully,

"BOLTON KING."

More Schools Linked up.—Under this useful scheme for exchange of natural history objects, papers, letters, etc., between town and country schools, in addition to the schools mentioned in previous issues, Johanna Street L.C.C. School is linked with Narsing Church School, Waltham Cross; Ethelburger Street L.C.C. School, Battersea, with Hamstead Ridware School, Staffs; and Shillington Street School, Battersea, with Cam School, Dursley, Glos. A bright feature of the working of the scheme is the keen interest which teachers, boys and girls, and parents are taking in it. ROMAN CATHOLIC SCHOOLS.—I am very glad, too, that a Roman Catholic school in Battersea has applied to join the scheme, and I hope that other Roman Catholic schools will follow the example.

Form of Declaration.—League for the Preservation of Wild Life.—In connection with the practical effort which is to be made by the B.E.N.A. to enlist the services of collectors themselves in preserving those rare creatures and plants which are in danger of extinction, the following form of declaration has been drawn up and approved by members. It will shortly be printed on large paper with space for signatures:—

"We, the undersigned, hereby pledge ourselves not (knowingly) to take, kill, buy, sell, or exchange any specimen, except such as are guaranteed to be foreign, of the following birds or their eggs:—Eagle, Kite, Merlin, Hobby, Peregrine, any Harrier or Buzzard, Osprey, Bittern, Spoonbill, Avocet, Great Skua, Kentish Plover, Raven, Chough, Bearded Tit, Oriole, St. Kilda Wren, Dartford Warbler, Hoopoe, Little Owl, Great or Little Bustard, Pallas's Sand Grouse, Ruff, and Red-necked Phalarope.

"Nor of the following insects, or their eggs, larvae, or pupae:—Swallowtail, Black-veined White, Wood White, Glanville Fritillary, Heath Fritillary, Black Hairstreak, Large Blue Butterfly, the Crimson-Speckled Footman, and Kentish Glory Moths.

"Nor of the following wild plants:—Teesdale Polygala, *P. austriaca*; Cornish Clover, *Trifolium bocconi*; Cotoneaster; Drooping Saxifrage, *S. cernua*; Sickle-leaved Hare's-ear, *Bupleurum falcatum*; Acrid Lobelia, *L. urens*; Annual Germander, *Tanacetum botrys*; Two-leaved Liparis, *L. loeselii*; Drooping Lady's-tresses, *Spiranthes romanoffiana*; Lizard Orchis, *O. hircina*; New Forest Gladiolus, and Variegated Simethis, *S. bicolor*.

"The only exception will be in the case of specimens bought or acquired by exchange as part of a bona-fide collection (in which case they will be removed from the collection and presented to a public museum), or found dead or injured, or killed by accident or mistake (in which cases also they will be presented to a public museum).

"We also agree to respect such other species, in danger of extinction, as may be added to the above lists from time to time."

To cover the cost of printing and circulating this form, donations from sympathisers will be welcome, and will be acknowledged in this column. Where practicable it might be a good plan for everyone who signs a form to be asked to contribute one penny to the fund, the amount being marked opposite the name; but there is no need for this. It is the signatures that are needed.

All readers who will take charge of a form should address their application to "League," care of THE COUNTRY-DE., 2, Tudor Street, London, E.C., enclosing a half-penny stamp for postage.

Will some energetic member wish leisure undertake to act as hon. secretary of the League?

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 97. VOL. 4.

MARCH 23, 1907.

1d. WEEKLY.

The Mouth of a Spider.

By FRANK P. SMITH.

Illustrated from Drawings by the Author.

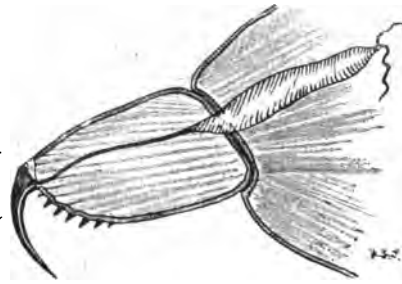
It is rather difficult to understand why it is that many enthusiastic naturalists so often deprive themselves of much that is interesting by relinquishing their observations of the incidents brought before their notice at a point where a little investigation would reveal a great deal more than is at first apparent.

Perhaps we might take, as a case in point, the incident of the capture of a fly by a spider. Almost everyone has witnessed the swathing of an unfortunate blow-fly by that rapacious denizen of our gardens, the diadem spider (*Aranea diademata*), and yet how few have thought it worth their while to consider what really becomes of the fly.

The few moments of excitement having passed, the spider settles down to enjoy its meal, and the observer almost invariably turns away, considering the interest of the incident to be at an end.

Should he seek information from the average popular treatise on natural history he may be enlightened to the extent of learning that the spider sucks the juice of its victim; but exactly how this is accomplished he is at a loss to know.

only six in number, but still it is not altogether an easy matter to explain their position, unless one is able to view the dissection of a specimen under the microscope. A few figures, however, will help us considerably.



Section through fang of a spider, showing the poison gland and duct.

Fig. 1 in the lower picture represents the front view of one of our commonest spiders (*Erigone dentipalpis*), showing the eyes and more especially the large organs known as the falces. Supposing now we cut away these organs, as in Fig. 2.

Two large side-pieces, the maxillæ or true jaws are now exposed, and between

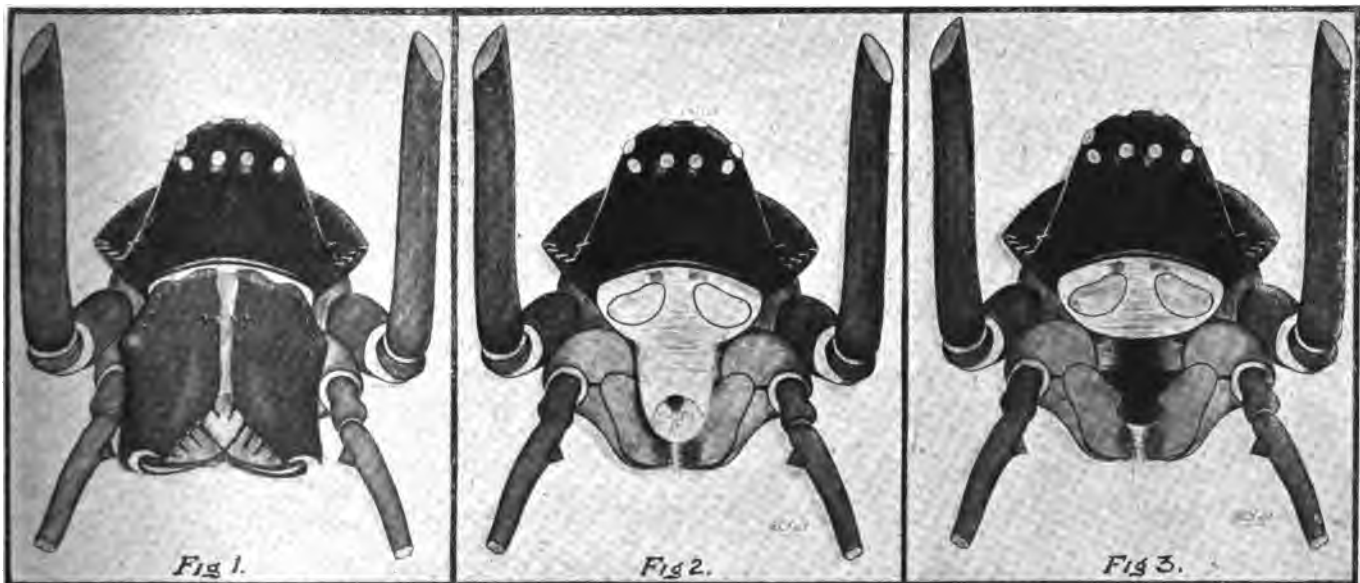
Supposing, now, that a large fly has fallen into the clutches of a hungry spider.

The falces are first brought to bear upon the hapless victim, and the movable fang with which each falx is armed is driven into the body of the fly. Each fang is pierced throughout the greater part of its length, and connected with the channel thus formed is a poison-gland (Fig. 4).

It is probable that the poison is not brought to bear except in the case of restless or unmanageable victims. The activity of the poison is apparently due to the presence of formic acid, but it seems to contain other compounds, notably a substance resembling albumen.

The victim being killed or paralysed by means of these terrible weapons, its body is forced between the falces in front and the maxillæ and lip behind. The falces are almost always well armed with teeth, and the maxillæ with a fine serrate ridge, so that the fly, once jammed between them, has little chance of slipping.

The function of the labium seems to be that of filling up the gap between the maxillæ, so that the whole group of organs clasp the fly into a kind of suction



Mouth of a Common Spider.

Fig 1 shows the "face" view of one of our commonest spiders. Fig. 2 has the falces cut away showing the jaws, and in Fig. 3 the tongue is removed showing the food channel.

Perhaps we might with advantage glance at the simple but wonderfully efficient mechanism by means of which the spider extracts the liquid portion of its prey.

The principal mouth parts of a spider are

them is a soft membranous tongue or rostrum.

We now remove the tongue, as in Fig. 3, and expose the lip, between which and the tongue is seen the channel down which the food passes into the stomach.

cup. The sucking power is supplied by a set of powerful muscles in the thorax, and this, combined with the pressure brought to bear by the falces and maxillæ, soon converts the body of the fly into a dry and shapeless mass.

Country-Side Notes.

*The works of human artifice soon tire
The curious eye;
But, oh! the free and wild magnificence
Of nature, in her lavish hours, doth steal
In admiration silent and intense
The soul of him who hath a soul to feel.*
—LONGFELLOW.

* * *

ONE of the pleasantest tokens of coming spring is the calling of the green woodpeckers all over the park. In the open country, when a solitary woodpecker has strayed thither, you may see him sitting upright on some high branch of a commanding tree uttering his ringing, laughing call, and then pausing for a response. None coming, he will call again, perhaps many times in succession; but at last he will take wing, and in drooping loops of flight will cover the straight distance to another conspicuous tree perhaps a quarter of a mile away. Then he will call again, and, failing response, will pass on as before. But for the wandering woodpecker, whom lucky chance leads into the timbered park, it is no question of listening in vain for voices of his kind, but of making good his right to raise his own voice among so many rivals. From half a dozen directions over the oak-clustered expanse of turf, dotted with hares like molehills, the cheery woodpecker voices are ringing, now with a rhythmic peal of measured calls, and now with the single note of affirmative response.

* * *

"It is interesting, too, to hear the nut-hatch, whose habits are largely those of the woodpecker, using the same dual call-note and response. Like the woodpecker, also, he has an astonishingly loud voice for his size, although as he slips along the tree bark in his buff-vested suit of Quaker grey he is seldom noticed. Even when seen he is often mistaken for a tit, and his habits seem to place him half-way between the woodpeckers and the tits. So does his voice."—From *The Country Day* by Day, March 17th.

* * *

How glorious it would be if ideal spring days were as plentiful as spring poets! There is something in the genuine old-fashioned spring day which fills one, perhaps, more than any other sort of day in the whole year, with the glow and gladness of life. To set forth to spend such a day in an office, or in any way than amid the revelry of Nature, seems a sacrilege. Appreciation of that glorious abstract something, which can at best be so poorly described by words, is seen and heard on all sides. The spring flowers seem to smile as the balmy fluttering breeze caresses their petals; the chaffinches "chink" their gladness; the rooks caw the livelong day that all is well; and even the noise of the mowing machine on the lawn comes as a monotonous anthem of rejoicing. Merrily the carter lads whistle their simple songs over and over again as they guide the corn-drills across the crumbling fallows, while the rollers and harrows complete the accompaniment. And so right on till late evening this bounty of spring's perfection continues till

the last chiming prongs of the labourers, working late in their gardens, attune soft symphonies, to sleep.

* * *

By the time this number appears the pioneers of the migratory host of small birds will be with us. Along the lane or in the garden some day or other, often even before the middle of March, may be heard the first spring call: "Chiff-chaff, chivvy-chavvy" of the smallest and earliest of the host from the South. A wonderful thing it is that the little chiff-chaff, the smallest of our warblers, should be the first of his tribe to arrive here. He would stay all the time if he could, for some specimens winter here annually, and the species does not go so far south as the commoner willow-wren, which it so much resembles but for its duller colour, smaller size, and shorter wings.

* * *

The next pioneer of spring is the wheatear, a bird which does not attract attention by his note like the chiffchaff, but yet is probably better known. For who, walking through open ground with an eye for natural objects, has failed to note the slender fawn-coloured bird with the short black and white tail, that flies before one or perches on some clod or low fence in full view? Even in the London parks he announces the spring, and, like the chiffchaff, sometimes does not leave us at all. Gilbert White, indeed, seems to have regarded him as a resident.

* * *

His range is a wonderful one indeed. All over Europe and North Asia he may be met with, and his spring wanderings take him even to such remote breeding haunts as Iceland, while he winters south of the equator. Even Greenland is not too far for this boldest of migrants to visit and colonise. Possibly, like the Norsemen of old, he got there from Iceland; while on the other side of the world he is invading Alaska from Kamschatka, being the only chat found in the New World. It is the largest and finest wheatears that penetrate to Greenland, and this bigger race does not visit us till later than the ordinary specimens, which may be here in mid-March. It appears to be a rule in bird distribution that where a species can thrive in different climates it is in the colder part of its range that it attains the greatest size.

* * *

How birds may extend their range and make settlements in new countries has been well exemplified in the case of the Siberian black lark (*Melancorypha yeltoniensis*), the latest addition to our British list. It appears from communications made to the British Ornithologists' Club that a male of this bird was shot at Sewers Bridge, near Pevensey, Sussex, on January 29th last, and that another was killed at Lydd on February 18th, and a third at Rye on February 16th. Others were seen, the Sewers Bridge specimen in particular having been in the company of another pair and a female. These birds occurred after a wave of very cold weather and north-east winds, and it is suggested that they had migrated in front of this

cold wave in January. This, although a Russian and West Siberian bird, has occurred before in Belgium, in Heligoland, and in Pomerania.

* * *

It has not infrequently been brought over here as a cage-bird, but this would not affect the genuineness of the above visits, as the individuals occurring were too many to be put down to "escapes." The fact that this lark has bred in captivity, both in the Zoological Gardens and with a well-known London amateur, Mr. R. Philips—in the latter case a young bird having been successfully reared—gives reason to believe that if this cold-driven flock had reached a spot remote from human intrusions they might have established a breeding colony in this country. In case anyone comes across this bird it may be mentioned that the hen is much like an ordinary skylark, but larger and shorter-tailed, and that the cock in full plumage is black, though in winter he has so much brown fringing to his feathers that he is not noticeably different from the hen.

* * *

Blackbirds and thrushes in the woods possess a strange fancy for building their nests in the little piles of bawns into which the felled underwood has been "worked up." But no more risky site could possibly be chosen. Probably not more than five per cent. of the owners of nests so situated ever have the pleasure of getting so far as hatching their eggs. For the rooks are always busy hereabouts; and even should the eggs or young escape the prying rooks they are almost certain to be raided by stoats and weasels. Yet, in spite of bitter experience, these woodland choristers go on persevering and losing.

* * *

Though white or partly white blackbirds, sparrows, etc., are frequently reported, the announcement of a well-marked instance of albinism in a fieldfare is very unusual; indeed, it is believed that there is no such specimen at the Natural History Museum, South Kensington. The gamekeeper who writes for us "From a Gamekeeper's Notebook" has in his possession a very beautiful example of a semi-albino fieldfare.

* * *

A correspondent suggests, with regard to the numerous plovers' nests which never contain any eggs, like superfluous wrens' nests, that they may be partly the result of preliminary nesting operations; and, further, that the reason the nest where the eggs are laid is generally in the hardest spot to find is because it is the site finally selected by the birds, and therefore most likely best to suit their ideas of concealment.

* * *

Moreover, it is certain that other ground-nesting birds act likewise. For instance, as the nesting time approaches, partridges, especially when there is an unusually warm day (which warns their instinct that they must be choosing a nest-site), make many scrapes on the hedgebanks, the majority of which are never used for eggs. Again, there is a similarity in this false nest habit of peewits and

partridges in the fact that the scraped-out nest the birds decide on is more or less lined with bits of stubble and dry couch-grass and dry leaves and grass.

It seems curious at first sight that while young rabbits are born blind, helpless, and naked, leverets from the moment of their birth are perfect little hares in every detail. This illustrates the wise provision of Nature to suit the habits and circumstances of hares and their methods of bringing up their young. For one thing, were leverets born coatless they would quickly perish of cold; whereas baby rabbits lie snugly till they are fully clothed in a cosy nest of dry grass, lined with fur from their mother's breast, underground, unlike leverets, which are cradled from first to last with the heavens for their roof.

The fact that the eyes of leverets are open from birth is a further instance of Nature's forethought, devised indirectly to lessen their many dangers to which baby bunnies are not exposed. To minimise the risks of her family the doe hare does not keep her young for long in one spot—the birth form—but disposes them separately in what are known as suckling forms. Now, as it can scarcely be credited to a hare that she is able to remember how many little ones she has to provide for, the use of their eyes, it is suggested, is given them to enable them to recognise the approach of their mother.

A number of correspondents have written lately in reference to Adaptation, mostly in favour of it. One of them, however, seems to think that as natural selection has served as a good working hypothesis, there is no reason why it should be superseded. But Natural Selection could not originate species; all that it could do would be to pick out the most suitable from a number of indefinite variations. That was Darwin's theory, which Huxley described as a "method of trial and error." Professor Henslow, commenting on it, says: "No such method exists in either of Nature's laws. If gravitation, the laws of heat, etc., were inconstant we could not depend upon them; yet in the highest and noblest work of Nature—the making of plants and animals, including man—the process is supposed to be due to chance variations having no relationship to the requirements of the being." This, on the face of it, is incredible.

The more closely we examine organisms of every kind, the more plainly does it appear that variations always follow a definite line tending to adapt them to their surroundings. When we see plants invariably exhibiting the same characteristics in the same circumstances, even though they belong to widely different genera, it is safe to infer, not that they have done so as the result of chance variations, but that they have in the course of many generations been moulded by the conditions under which they live—in other words, by their environment. When, for instance, we find that most plants growing in hot places like the Riviera are hairy, and in still hotter and drier places like the tropical deserts are spiny, it is reasonable to sup-

pose that hairs and spines are the consequences of heat and drought, and when we see that plants living in marshy places are mostly without either hairs or spines, the supposition is confirmed. There is plenty of other evidence to the same effect. For many plants, such as Bladder Campion, grow in both wet and dry positions, and in the latter the leaves are hairy, while in the former they are not.

It is a well-known fact that many ferns, like the common hart's-tongue, which produce more or less entire fronds when they are growing wild, often begin to throw out little tufts at their extremities after they have been under cultivation for some time. Here we get a definite variation, which is obviously due to the change in the conditions—the greater supply of food and moisture. Water has a decided effect on the shape of leaves. In most aquatic or sub-aquatic plants they are much cut up. Lord Avebury suggests that the object is to expose as large a surface as possible to the action of the water, and he refers by way of analogy to the thin plates in the gills of fishes. In an American plant (*Proserpinaca palustris*), closely allied to our water milfoil, the leaves are lanceolate when the plant grows on land, and dissected into midrib and lateral veins only when it is in water. It has been proved experimentally that the difference is due entirely to the action of the water.

The height of the primrose season is at hand, and the flowers are all too frequently the innocent cause of unpleasantness between those who would gather them and gamekeepers. Often, too, the outcome of these encounters is that woods are closed to everyone. A little common politeness goes a long way towards unlimited primroses. You would never dream of entering someone's garden uninvited, even though your object was only to gather weeds. You would ask permission first. Very well, then, why not ask permission to gather primroses from the owner or tenant of woods and make friends with their keepers? If you think they lack humaneness or discrimination by treating all creatures which are not game as vermin, you may then lead them to better ways. You won't otherwise.

An Invitation.

Leave the firelight's tempting glow;

Leave the easy chair;

Close your book, and let us go

Where the fresh, keen air

Sweeps across the upland plain,

Stirs the elm-twig laces,

Blowing cobwebs from the brain,

Shadows from our faces.

Dear—once more, for you and me

The gates of Life ajar—

Let us enter joyfully

Where light and splendour are;

As, across the winter's gloom,

Spring's approach foretelling,

Gleams the pink of almond bloom—

Shine the fruit-buds swelling.

MABEL E. WORSFOLD.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Animals.—FIELD-MOUSE, RABBIT, MOORHEN, and WATERRAIL, turned out of a single burrow by party of sportsmen with ferrets, near Chelmsford, on March 2nd. Pure white stoat, with black tip to tail, seen January 27th; two seen February 14th, pure white with black tail tips, at Pyle (Glam.) (E. W. H.) Rabbits' nest containing two half-grown young, at Pyle (Glam.), February 28th.—(E. W. H.)

Birds Seen, etc.—CARRION CROW at Quorn, February 21st. I watched this bird when it was calling from its high perch, and noted that every time it uttered its characteristic note it bowed its head very gracefully, like the turtle-dove.—(G. F.)

GREEN SANDPIPERS: Since November we have had four of these birds staying with us, their favourite haunt being a sheltered brook near the village; they were also to be seen at a fishpond, and another brook near our reservoir. They were resident through the coldest weather. Is not this unusual? I notice them every year in the spring and autumn, but this is my first experience of noting them in the winter.—(G. F.)

KITTIWAKES: A friend of mine was fishing in the canal near Leinster on February 7th, and had two kittiwakes as companions for some time. They appeared quite ravenous, attempting to take his bait, and could scarcely be driven off.—(G. F.)

Marked Birds.

BLACKBIRD, with white patch above its tail, and several splashes of white on its tail, at Oxford, February 28th.—(J. H. Vickers.)

Birds' Song.

BLUE-TIT in song at Quorn, February 16.—(G. F.)

CHAFFINCHES: One gave full song March 6th, others only part song, at Southport (B. Collinson); in song at Quorn February 17th.—(G. F.)

LARKS, part song, Southport, up to February 27th, full song (and soaring) March 6th.—(B. Collinson.)

YELLOW-HAMMER in song at Pyle (Glam.), February 28th (E. W. H.); at Quorn February 16th.—(G. F.)

Birds' Early Nests, etc.

BLUE-TIT building, Horsham, Sussex, March 3rd.—(A. G. G., Thomson.)

ROOKS began nesting in earnest at Quorn, February 25th.—(G. F.)

Wild Plants.

PRIMROSE in bloom February 18th, **SWEET VIOLET** February 18th, **WILD STRAWBERRY** February 21st, **DANDELION** and **COLTSFOOT** on February 28th, at Pyle (Glam.)—(E. W. H.)

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the March competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

IF YOU WANT TO BUY OR SELL OR LET, TRY OUR SALE AND EXCHANGE COLUMNS.

(See Back Cover.)

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Thrush on Moving Train.—As a passenger train was travelling near North Weald a thrush flew from a wood by the side of the line and alighted on the jacket of the fireman, who was on the footplate of the engine. It clung there till captured.—S. COOK, Middlesbrough.

Do Birds Yawn?—I have kept linnets nearly all my life, also several other British birds, as well as canaries, and many foreign birds also, and at no time in my experience have I noticed them "yawn," except when they have got a chill, and then they make what bird-fanciers call a "wheezing" noise, opening and shutting the mouth slightly, more so at night, when roosting.—W. LIDGETT, Newark, Notts.

Voracity of Pike and Vitality of Gudgeon.—When pike fishing with live bait in a small Norfolk stream on February 6th, I very quickly succeeded in landing a pike about 4½ lbs. Soon after, I succeeded in landing another pike about 2 lbs. I placed both fish in my bag, but by some mistake had not quite killed the smaller one, and when I took the fish home it gave one or two frantic jumps, and, to my surprise, threw up a small gudgeon, quite five inches long. The latter fish was quite whole, and, above all, was alive. This, I think, is remarkable, as I had carried the fish over a mile, and it had been out of the water nearly an hour. On examining the larger fish, I found it had swallowed a roach about eight inches long. Both pike snapped fiercely at the live bait. I have never known a pike to throw up a live fish as this one did.—G. W. S.

Long-Eared Owls.—One day I was walking in a small clump of trees where there were about a dozen fir trees, the only ones in the neighbourhood which is very thinly wooded. Noticing a quantity of pellets under one of them I looked into it, and saw five long-eared owls. Four flew away, and the remaining one continued to watch me after the manner of a cat. I had never heard or known of any in the locality. Nor have I known more than one owl to roost in a place.—HORACE GAUTREY, Cottenham, Cambs. [Long-eared owls are much commoner than is usually supposed. There is scarcely a pinewood without them. The five birds were, no doubt, a family of the year.—ED.]

A Sabbatarian Scottish Dog.—A gentleman of my acquaintance has a dog, who, purely from choice, fasts on Sundays. He may be offered the tastiest canine delicacies, but he resolutely declines them. The dog has never been instructed in this peculiar Sabbatarian

observance, and his owner humorously remarked that he is somewhat puzzled as to what his dog's ethical creed may be. He will take a late supper on Saturday night, after which, until Monday morning, he subsists upon moderate drinks of aqua pura only. Is not this rather curious?—W. H. A., Edinburgh.

A Desperate Fight.—The little freshwater lobster of our streams is a crusty animal in more senses than one, and when two come together in fight they are likely to separate in a somewhat dilapidated condition. Honours have been equally divided between the two combatants in the picture, each having lost a claw. The injury will not upset them, however, as the claws will grow again, though not until they have cast their shelly skins several times will the reproduced members be

suddenly recollects he has urgent business elsewhere. Once my farmer had a young collie about nine months old. The yelp drew him, but a dog's bark as plainly tells his age as does his appearance. The fox advanced undeterred and boldly entered the yard. He played and "flustered" about with the young sheep-dog, and then when he thought he had him bought over sidled towards the fowl-house. The dog on the spot got between and it growled fiercely. The fox tried again and again. But it was of no use. The dog would play with him as much as he liked, but he couldn't be bribed. The fowl-house dare not be approached. The fox came back three nights running, redoubling his efforts, but it was of no use, the dog was wiser than Philip of Macedon's dukes, and could not be bought by friendship.—(REV.) JOSEPH MEEHAN, Creevelea.

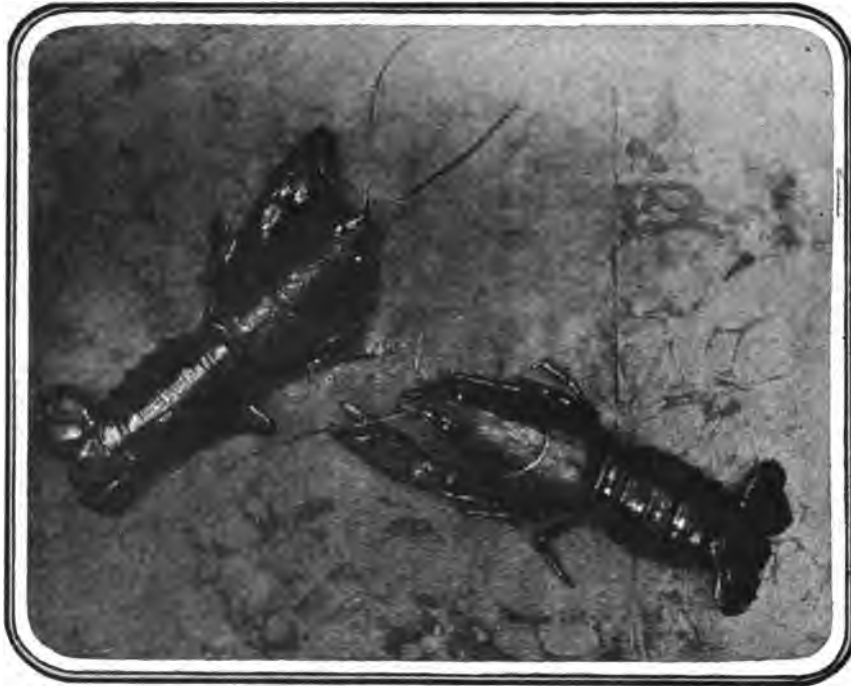


Photo.]

After the Battle.

[Rev. S. N. Sedgwick-

Crayfish as they appeared at the close of a fight in which each lost a claw.

of full size. This ability to reproduce lost limbs is of the greatest value to crustaceans generally; they can leave a too-powerful enemy with a parting nip at little loss to themselves, for the severed limb comes away at a joint, causing little bleeding.—F. F.

Cunning Fox and Faithful Dog.—Around here a score or so years ago foxes were much more plentiful than they are now, and the raiding of a hen-house or the carrying off of a fat fowl, or of a stray goose an occurrence none too uncommon. An old farmer whose Christmas dinner occasionally so disappeared is not sorry for the extinction of the "varmint." Battling with them all his life he came to know, like a book, all their little ordinary tricks and manoeuvres. Only by a fresh strategy had he a chance of being out-generated. A fox, he says, when coming about a place, sits down in a safe and shady place about 150 yards off to reconnoitre and gives a yelp or two. This he does to discover if there be a dog about. If there be a Brer Fox

most two of a flock of fieldfares utter a screaming note, while all the others chatter? The proportion of birds which scream seems to increase as the weather grows hard.—ED.]

A Tit's Regularity in Feeding.—Having placed a cocoa-nut shell containing chopped suet and fat in a cherry tree, I have noticed a great tit among the daily visitors, and what has struck me has been the fact that the bird has arrived on each day within ten minutes of the same time.—A. E. TALLIS, Moseley, Birmingham.

Animal Traits.—A cat belonging to my father had a very curious habit of, whenever possible, climbing on a dressing table and extracting all the pins from the pin-cushion and making a heap of them. A dog, belonging to an old servant of my grandfather's, has lately taken to feeding the birds in the garden. It takes a crust of bread, breaks it up, and then retires into the house and watches the birds eating it from the window.—E. V. P. SIMPSON, B.E.N.A.

The Fieldfare's

Notes.—I heard the song of the fieldfare some years ago. It was in this district, during the month of May, the birds having remained late with us. There was a flock of birds, and the males were chasing the females in amatory flight—darting about in a very different manner from their ordinary style of progression on the wing—and the males were uttering a soft, pleasing warble, not so loud or shrill as the twittering of the swallow.—WALTER B. ARUNDEL, Major, F.Z.S., M.B.O.U. [This very interesting note has been held over from last summer, until the season of the fieldfare's departure should return. Will readers listen to the late-staying fieldfares this year? Another very interesting question connected with the fieldfare's notes is: Why, during the winter, do one or at

most two of a flock of fieldfares utter a screaming note, while all the others chatter? The proportion of birds which scream seems to increase as the weather grows hard.—ED.]

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A Young-Bearing Shield Fern.—*Aspidium angulare* is not only remarkable for its world-wide distribution, but it is also one of the most variable of all ferns. Fanciers of British ferns, for instance, distinguish some hundreds of varieties of it; E. J. Lowe, in his "British Ferns," describes over 350 of them! Clearly,

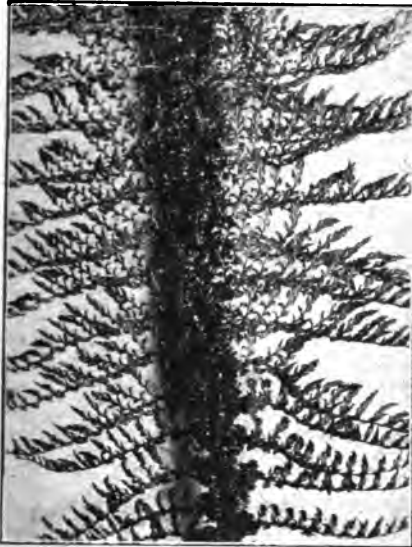


Photo.] [T. Evelyngh.
A Young-producing Shield Fern.
This is one of the most variable of all ferns.

therefore, this is a fern without any fixed character; at any rate, it is as difficult to define as a mongrel fowl, which would be *Gallus bankiva*, var., anything one liked to call it. The fern of which a portion is shown in the photo-illustration is *Angulare proliferum matatum* of fanciers, and in plain English it is the changeable, young-producing, shield fern. Many of the forms of *A. angulare* develop reproductive buds in the axils of the pinnae along the mid-rib of the frond. Functionally, these buds are the same as the bulbils developed in the leaf-axils on the stem of the tiger lily. They reproduce exactly the characters of the plant that bore them, and are, therefore, resorted to by fanciers for the multiplication of any particular variety. Some of the forms are very decorative, being quite as plumose as the New Zealand *Todaea superba*, and others have the stateliness of a small *Dicksonia*. Spores of *A. angulare* will produce some kind of the species, but this is not exact enough for the cultivator. There is a fine selection of the varieties in cultivation at Kew.

"Was Darwin Wrong?"—Whatever botanists may think, most zoologists who have studied the subject of evolution at all will reply to this query in the negative, and the reason seems not far to seek. The editor has expressed it in the first paragraph, on p. 133. People fail to recognise that "adaptation to environment" (or "the survival of the fittest") is the outcome of "natural selection." In the case of plants this is exercised principally, I think, in the direction of acquiring strength and vigour and the quality of "push," because plants have little else than weather and the competition of their fellows to contend with; amongst them "sexual selection" is probably non-existent, and "protective resemblance" rare. Amongst animal life, on the other hand, the latter phases of natural selection are so important, and instances are so obvious that many hundreds may be cited. Can the Rev. J. Gurnhill, or Mr. Holder bring forward any instance to show that anything but natural selection has actually brought into being any species whatever? There is no doubt, of course, that in the case of plants,

seeds sown in unusual conditions will sometimes develop into unusual varieties, but these varieties would not be new species and could only continue to propagate their own particular characteristics so long as the conditions which determined their appearance in the first instance persisted. All the monstrosities called "improvements" by gardeners and florists will revert to the original types unless the treatment which produced them be carefully kept up. It is, I think, perfectly safe to say, that no two things in the universe are exactly alike to the smallest detail; certainly, no two individuals of any species have ever been found exactly alike. How does this bear out Mr. Holder's statement about protoplasm (p. 135)? Some species are undergoing obvious alterations under our very eyes; how is the "separate creation" idea to be reconciled with this? Why does "design in nature" apparently exclude the possibility of "natural selection"? It seems to me that the evolution of species by "natural selection" is a far more magnificent idea and a much more convincing evidence of design than the mere manufacture of a certain number of fixed and immutable species, which would require fixed and immutable conditions under which to live, lest they should become extinct. The quotation from Huxley at the end of Mr. Holder's letter is a contradiction in terms, and therefore carries its own refutation. If a thing is a truth, it cannot become a superstition.—C. NICHOLSON, Chingford.

The Cuckoo's Note.—I used to suppose that Browning was right when he wrote, of the coming of Spring, "We shall have the word, In a minor third, There is none but the cuckoo knows," and that when, according to the old rhyme, "In June he alters his tune," the change was to the major third. But when I have paid attention to their note in the last year or two, the earliest cuckoos generally sang in a major third, and the change to the minor came later. Towards the end of the season, indeed, every variety of interval may be heard, from the fourth down to the full tone, though this last is rare. In the neighbourhood of Darjeeling, in the Himalayas, the song never seemed to vary from the minor third. Observations during the coming summer would be useful.—A. C., Devon.

"Two British Chaffinches?"—The interesting discussion as to whether there are two species of chaffinches in this country or not reminds me of the belief prevalent in Selkirkshire, and, it may be, in other parts of Scotland also, that there are two types of "shilfie" (chaffinch). In April, 1902, I took an egg from a chaffinch's nest, placed well up in a tree, and thinking it a rather peculiar one, I showed it to the natives of the place, and they said that it was a "paper-shilfie's" egg. On asking what they meant they described the peculiarities of the nest and eggs, and, if I remember rightly, these corresponded to the descriptions of Messrs. J. Inman and H. Frost, as given in THE COUNTRY-SIDE of February 23rd, except that the nest was generally constructed with more or less paper. Hence the name "paper-shilfie" (i.e., paper-chaffinch). The egg I have still. It is longer, narrower, and more tapering than is generally found in the eggs of this species. Also, it is not so much splashed with colour as the other eggs of the species which I possess. Of course, this does not prove that the egg belongs to a distinct species, as varieties in shape and colour are so common; but it is interesting that such an opinion exists.—WALTER C. BELFORD, Edinburgh.

The Microscope.

HINTS FOR BEGINNERS.

THE beginner is often discouraged by the idea that microscopy can only be studied with extensive and costly apparatus. This is, however, an incorrect impression to form, for some of the most valuable work has been done with the simplest instruments. All that the student requires as a commencement is a microscope of unpretentious construction; or even a good pocket lens is of the greatest value to a serious worker.

Skilful management of the light is of far more importance than great magnifying power. I have found by experience that the lower power lenses are always the most useful for general work.

Respecting the light, this should, if possible, be on the table, and the brightest obtainable, but with a piece of ground glass or opal in front of it—this gives exquisite illumination.

Perhaps the most interesting field in all microscopic study is that of pond life. Here is work for a lifetime. All that is required to start with is a wide-mouthed glass bottle, into which water from ponds and stagnant streams may be placed, taking care to add some half-decayed vegetation and a little mud from the bottom. Running water is practically devoid of microscopic life. At home the water should be left uncovered and in a good light.

Place a drop of the water, together with a little of the mud and weed, upon a glass slip, and at all times of the year thousands of one-celled animals (Protozoa) will be revealed in the water by the microscope; among many others the *Amœba*, just a speck of living jelly, will be crawling over the glass slip, and the *Bell Animalcules*, with their thrashing hair-like cilia, will soon be noticed. Frequently they may be observed dividing themselves down the middle, and so forming two individuals out of one.

Vegetable life will also be represented by the exquisite Diatoms, and by Desmids and Algæ of many forms.

The accompanying photograph through the microscope is of the two claw-like fangs upon the head of a small garden spider. The spider usually manages to close its eight legs around its victim, and thrusts the fangs into its body; poison is then injected into it by means of



Photo. [F. W. G. Payne.
The claw like fangs upon the head of a Garden Spider.

ducts passing through the fangs, and the insect's struggles are soon at an end.

FRED W. G. PAYNE.

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(See Back Cover.)

Week's Wild Life in Pictures.

The Rook.—The Wild Duck's Treasure.—The Pale Brindled Beauty.—Oak Beauty Moth.—A Beautiful Lichen.—The Frog's Offspring.—Sloe or Blackthorn Blossom.

(See opposite page.)

THE rook (1), "on her wickerwork high mounted," now devotes her attention to the incubation of her sea-green, brown-mottled eggs. Her mate, for his part, keeps her plied with all the delicacies of the season, pouching his finds under his tongue, to deliver them into her bill as she solicits his kindness with fluttering wings and infantile cries.

2. The wild duck's treasures, pleasant to the eye in their subdued green, lie on a bed of the mother's down, worked in with the simple materials of the nest. She must have been disturbed to leave them exposed, for her ordinary custom is to pull the bedding over them when she leaves her charge voluntarily.

3. The pale brindled beauty is always an early moth, but last year it was found by our readers earlier than usual. The female, which is shown in the photograph below the male, has no wings, and runs up the trunks of trees like a spider. The male is grey in colour, tinged with yellowish brown, and the wings are rounded without any trace of angles. The creature has a very worn appearance, and there is nothing very distinctive in the markings.

4. This photograph of an oak beauty moth is from a set specimen in a collection; but in our Week's Wild Life for last year we gave a photograph of a living specimen resting upon a wooden fence, which showed admirably the value of its protective colouring. It is a large moth, beautifully marked, but only the sharp and experienced eye can detect it when it is at rest. Its caterpillar has an equally effective disguise.

5. This beautiful lichen (*Cladonia pyxidata*) is typical of its tribe, the *Cladoniae* which is distinguished by a foliaceous thallus and apothecia on footstalks; in other words, the basal structure is leaf-like, and the spores are developed in the raised urns seen in the illustration. The genus is interesting as including "the reindeer moss that whitens all the hill," and it is the most widely distributed of all the lichens.

6. The frog's offspring, tailed, tiny, and black, show clearly through the masses of transparent, slimy eggs in many a ditch and pool. Soon the little tadpoles will be out and wriggling through the fish-like first stage of their existence—water-breathing scavengers, soon to become leaping hunters of live prey ashore.

7. Hedgerows in the country are now gay with the white buds and open flowers of the sloe or blackthorn, one of the earliest harbingers of spring. Where it is happy it forms dense bushes, which in March burst into leaf and flower, and are really attractive. There are many less beautiful shrubs treasured in the garden; indeed, where love of flowers is not confined to exotics the sloe is allowed to figure among border favourites. It is the *Prunus communis* of some botanists, the *P. spinosa* of others. The fruit is used in making sloe gin, and it used to be used for adulterating port wine. Once upon a time, when tea was dearer, the leaves of the sloe were dried and mixed with tea. They are poisonous, but that didn't matter.

Additions to the Natural History Museum.

By R. Lydekker.

AMONG the additions to the exhibition galleries during the last fortnight perhaps the most generally interesting are the models of a giant octopus and of a giant squid or cuttle-fish which have been suspended from the roof of the fish-gallery.

The octopus is indeed an enormous and uncanny-looking monster, but in point of length it is altogether eclipsed by the squid, which measures no less than forty feet from the tip of the tail to the extremities of the single pair of specially elongated arms. Thirty feet out of the forty are, however, taken up by this pair of arms, the body itself measuring only ten feet.

All the other arms are much shorter and stouter than the elongated pair. This squid, known scientifically as *Archæon this*, is one of the species upon which the sperm-whale feeds. Judging, however, from the accounts given by the Prince of Monaco, many individuals must grow to a size vastly greater than that of the one represented in this model.

The collection of domesticated pigeons has been increased by the gift of a champion specimen of the silver runt bred by Mr. W. A. Hasler, of Newport, Essex, the donor.

The skeleton of the very celebrated bloodhound "Burgundy" has been presented by Mr. Edwin Brough, of Scarborough, a well-known breeder of these splendid dogs. In his opinion, "Burgundy" was the best bloodhound ever bred.

Another addition to the series of domesticated dogs is the skull of the famous bull-dog puppy "Neatsfield," presented by its former owner and breeder, Mr. H. S. Wamsley. Although this promising dog died last year at the early age of eleven months, it was wonderfully successful on the show-bench.

Passing from the hall, where the pigeons and dogs are exhibited, to the reptile gallery, visions of city banquets will be conjured up by the latest addition, which takes the shape of a magnificent specimen of the green, or edible, turtle, the gift of Mr. T. K. Bellis, proprietor of the well-known turtle emporium in Bury Street, St. Mary Axe, E.C. As its shell measures considerably over a yard in length, the new specimen may be regarded as a fine example of its kind.

The green turtle, it may be observed, is employed solely for culinary purposes; "tortoise-shell" being yielded by its uneatable relative, the hawksbill turtle, in which till fully adult (when they come into contact with one another at their edges in their normal manner) the horny plates covering the upper shell differ from those of the green turtle by overlapping one another, like slates on a roof. The third species, which derives its name of loggerhead from its great ugly cranium, is practically of no commercial value, although its plates are occasionally employed as an inferior kind of tortoiseshell.

Many of the finest specimens of antelopes in the collection were shot by the great African hunter, Mr. F. C. Selous. Recently, Mr. Selous has turned his attention to the big game of North America, and, as the result of a trip undertaken last year to the north-west, he has presented to the Museum a couple of magnificent specimens of male cariboo, or American reindeer.

They belong to different races of this exceedingly variable species; the larger and darker coming from the Yukon, and the smaller and whiter from Newfoundland. For the moment they are placed in one of the bays on the sides of the main hall; but when transferred to the lower mammal gallery (or animal gallery, as the editor would doubtless prefer to call it) they will serve to show how widely these American reindeer differ, alike in size, colour, and the complexity of their antlers from the typical reindeer of Scandinavia.

Mixed Bag.

Bee and Red-clover.—The domesticated hive-bee is unable to extract honey from the red-clover, the white alone being acceptable.

Expensive food-bill.—The upkeep of the Zoo must cost an enormous sum of money considering that the food-bill for 1904 amounted to no less than £3,500.

Competition in Smells.—The skunk is generally considered the most odorous animal on the earth, while next to him in the scale comes the "stink-ant" of North Africa.

An Old Sheep.—A sheep had to be destroyed at Stainmore in Westmoreland which was over thirty years old. This remarkable ewe had given birth to 27 lambs in as many years.

A Formidable Beetle.—The Hercules beetle, found in the West Indies, is as large as a sparrow, and would probably turn the scale against the bird if weighed.

The "Herring Spink."—The golden-crested wren is known to fishermen, upon whose boats it settles in large numbers during the migrating season, as the "herring-spink."

A Large Breakfast Egg.—The *Cepyornis* of Madagascar, which is an extinct bird of gigantic size, laid eggs which measured 13 inches by 9½ inches, being about eight times as large as those of the ostrich.

Superstitious Fisherman.—There is a superstition common among fishermen, to the effect that the pain of a weever fish's sting must continue until the next low tide, neither more nor less.

Green Plover as Swimmers.—It is not generally known that the green plover, or lapwing, is an expert swimmer. A number of them were once seen resting on the water of Lough Derg, Co. Limerick.

Mirrors in the Lion-House.—To keep the occupants of two neighbouring cages in the Manchester Zoo—a lion and a Bengal tiger—interested in each other's doings, the keepers fixed a large mirror so that each animal could see what the other was doing.

Living Incubators.—Two ladies once informed Mr. Kearton, the famous bird-photographer, that for three seasons a pair of starlings had hatched out fowls' eggs for them. A single hen's egg being substituted for the starling's clutch.

Ferret Drives out Fox.—Whilst ferreting for rabbits in West Cleveland, a man had the unusual experience of seeing a vixen driven out of one of the holes by the ferret. The fox got entangled in one of the nets and was easily secured.—N. Smithson.

The Great Spotted Cuckoo.—The great spotted cuckoo, common in Southern Spain, lays its eggs in the nests of crows and magpies; the young imposter, however, does not throw its companions out of the nest, the reason for this probably being that the nest is large enough for all.

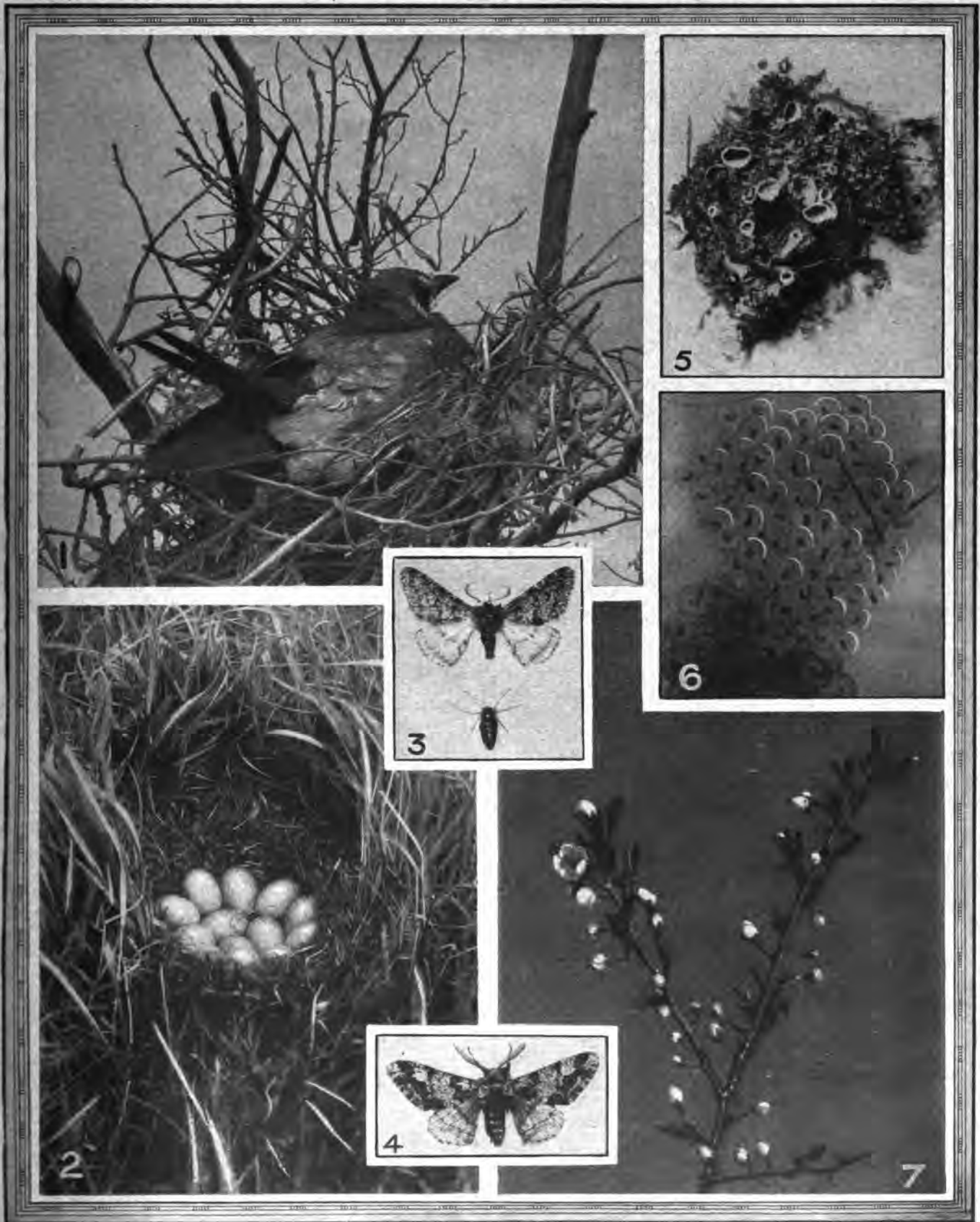
Reynard's Cunning.—A fox, "killed" by the Ulleswater foxhounds, was being carried away by one of the huntsmen, when the "corpse" suddenly bit the man's hand severely. On being dropped it made off at a great pace; the hounds, however, quickly followed and killed beyond dispute.

Elephant's Poor Sight.—Mr. Ewart S. Grogan, a great authority on, and hunter of, big game, says of the elephant that "They have very poor eyesight, and unless one moves they cannot detect one even at a few yards." Mr. Grogan adds that "their hearing is good," and that "their sense of smell is wonderful."

Vitality of a Damson Tree.—In October, 1891, a very old damson tree in a garden in Croft was uprooted during a violent gale. It was cut up into logs and the roots and a portion of the stump were thrown into a ditch. After a lapse of three years the stump was requisitioned for a clothes-line. In six years a tiny shoot appeared which made such vigorous growth that in three more years a clothes basket full of damsons was gathered from it.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 272.)



1. Rook, *Cyanocephalus cyanocephalus*, on nest (J. T. Newman). 2. Nest of Wild Duck, *Anas boschas* (J. H. Scudder). 3. Male Brindled Beauty Moth, *Phigalia pilosaria* or *pedaria*, male above and female below (A. E. Tonge). 4. Oak Beauty Moth, *Amphydasis prodromaria* (T. M. Blackburn). 5. *Cladonia pyxidata* (H. S. Colthurst). 6. Spawn of Common Frog, *Rana temporaria*, hatching (C. H. Rose). 7. Blackthorn or Sloe, *Prunus spinosa* (G. B. N.)

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to A. A. Falconer, Elder Bank, Duns.

Why will not Stones do for Fuel as well as Coal?

Stones, consisting chiefly of silicates and carbonates of the metals and alkaline earths, are incombustible—that is, they contain no material which, by uniting chemically with the oxygen of the air, will burn and give off heat, which is the essential of a fuel; whereas coal consists of vegetable matter which has been acted upon by the air, moisture, and pressure of superincumbent materials and converted into almost pure carbon, with varying quantities of gases, such as hydrogen and the hydro-carbons, all of which are highly inflammable, giving to coal such a high calorific or heating power. In some rocks there is a little sulphur or carbon, and in these cases they burn feebly.

What are sand-pillars?

Sand-pillars, or sand-spouts, are columns of sand raised by whirlwinds, and are similar in appearance to water-spouts. They are often seen in hot countries, such as Australia, India, and Africa, where there are large tracts of desert sands. The sand is lifted to varying heights by the strong inflowing and ascending currents of air. Their altitude is determined by the strength of the upward current and by the height at which they are turned outward from the vortex. Sand-pillars sometimes extend as high as the clouds, often occur in groups, and frequently carry destruction in their paths.

To what extent is the laburnum poisonous, and what animals can eat it without ill-effects?

The leaves, bark, and especially the seeds of the laburnum (*Cytisus laburnum*) contain a principle named *Cytisine*, which is at once a narcotic and a violent emetic and purgative. Fatal results have sometimes happened to children and cattle who have eaten the seeds; and accidents of this kind would no doubt occur more often were it not that the taste of the seeds is far from attractive, being nauseous in the extreme. Hares and rabbits eat the seeds and gnaw the bark of laburnum with impunity. Boys have masticated the roots because they "taste like liquorice," and have been made ill thereby. Pliny recorded that bees would not visit the flowers because of their poisonous property, and Darwin found that the insects played a large part in fertilising the flowers.

What are sparks, and why, when sticks of wood are laid upon a fire and sparks begin to fly, is there a crackling sound?

Sparks are small pieces of incandescent wood which are separated from the log and ejected by the force of air. Woody

substances are cellular, and in the cells air and other gases are imprisoned. These gases, as the wood burns, expand, burst their prison walls by miniature explosions, thus causing the sparks to fly. The crackling sound is the noise caused by the series of explosions.

What results would follow if everywhere ice were to become heavier than water?

If ice were to become heavier than water it would, as formed, fall to the bottom, and, thus accumulating, lakes and rivers would be frozen to solid masses, which the summer's sun would be unable to thaw. This cannot now occur, because water, being at its greatest density at 4 deg. C., when the surface falls to this temperature the water there sinks, being replaced by a warmer supply from below. A constant circulation is thus maintained until the mass reaches 4 deg. C. The surface water, being now cooled still further, floats, and at 0 deg. C. solidifies, forming a protecting roof over that below. Fish life, etc., is thus protected, whereas if the ice sank and ponds, rivers, and seas froze solid, all life would be destroyed. Not only so, but the oceans would probably freeze gradually from the Arctic to the temperate regions, and only the tropics would be habitable. A reader somewhat humorously suggests that there would be an advantage in ice becoming heavier, by which he takes for granted that it would contract, and not expand as at present. "Man would not be troubled," he says, "with split water-pipes."

Can the mole make noises that are inaudible to the human ear?

It has been found that the mole can give a sound so exceedingly shrill that it is quite impossible for the human ear to detect it; and that it can also give a sound so low that neither can it be heard. The phono-autograph, however, a delicate sound-registering instrument, gives a record of both.

Do fishes' eyes vary in size according to the depth of the seas in which they live?

Yes. The eyes of fish get larger as the depth of the water in which they live increases. But beyond 200 fathoms, at which depth daylight ceases, the fish have small eyes, with long feelers to do part of the work of eyes. Then in the greater depths the fish are mostly blind.

What curious meteorological phenomenon is sometimes caused by a great fire, and give a remarkable example of this?

Why does the sky appear blue?

How did plaster of Paris get its name?

When was tea first introduced to England?

What is the origin of the superstition that the moping of the owl foretells death?

Why are sandy soils unfavourable to vegetation?

What is the derivation of the terms larva, pupa, and chrysalid?

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(See Back Cover.)

The Country-Side Library.

Birds of "The Countryside."

THIS little handbook of familiar British birds is by Mr. Frank Finn, B.A., F.Z.S., the well-known contributor to our pages; and his name is sufficient guarantee that the letterpress is both accurate and interesting. The book is intended for the beginner in the study of bird life, but while it is written in a chatty style, and is free from technicalities, it must not be supposed that the book is not a valuable and useful addition to the natural history library. A book of this kind was wanted, and Mr. Finn has done his work well.

In the introduction the author says his book is primarily intended to serve as a means of identification of the birds most conspicuous in life or literature, free or in captivity in this country. The easiest method of learning to know birds, in Mr. Finn's experience, is to identify the kinds that first catch the eye, and then to learn their relatives; and so he has arranged the species dealt with according to the circumstances under which they are likely to be first met with. At the end of the work the author has enumerated and briefly diagnosed all the natural families of birds occurring in our islands, even when these are only represented by casual stragglers, and this enables the reader to place a bird in the natural system, after having identified it. In his preface, Mr. Finn acknowledges his obligations to THE COUNTRY-SIDE. The book is most profusely illustrated. There are twelve excellent coloured plates, and 118 illustrations from photographs, besides numerous outline drawings. It is cheap at the price—3s. net. (Hutchinson and Co.)

The Commoner Birds of Britain.

Another little bird book—quite elementary—is that of Mr. David T. Price, M.B., entitled, "A Ready Aid to Distinguish the Commoner Wild Birds of Great Britain." Its title explains its object, and its price, 1s. net, makes it accessible to all. It is particularly commended by the author to teachers and students as a pocket companion for their countryside rambles. The birds are grouped doubly—according to size and according to the character of the locality they favour. A diagrammatic frontispiece showing the names of the various parts of a bird adds to the usefulness of the book. (Oliver and Boyd.)

C. R.

Selections from George Eliot.

The Pocket George Eliot (Chatto and Windus, 2s. net), is a neat little book containing extracts from the works of the author of Adam Bede. It has been compiled by Mr. Alfred H. Hyatt, and the passages seem to have been carefully chosen. An index at the end adds considerably to the usefulness of the little work.

The Churches and Modern Thought.

This book, by Mr. Philip Vivian, is interesting, as being the expression of opinion of one who, brought up apparently, in an orthodox home, has become an extreme rationalist. The argument is too obviously one-sided to appeal to any but those with a predisposition towards the writer's own views, but his sincerity is undoubted. The bias of the author is shown in such statements as that in which he suggests that it is common among the leisured and influential classes to sneer at organised Free thought in this country, "because it owes its inception and conduct chiefly to poor and lowly men." The section entitled "Nature Red in Tooth and Claw" is based on the old lines, and takes no notice of recent discussions, which have certainly modified the old beliefs on this subject. (Watts and Co., 3s. 6d. net.)

Amateur Photography.

Camera Repairs and Home Made Apparatus.

THE spring is always the time when apparatus should be subjected to an exhaustive overhauling. It is not possible that cameras and tripods should undergo the wear and tear of a whole year without being considerably the worse for it. To send the whole kit to the makers is one way of solving the difficulty but this course requires the expenditure of a certain sum of money, and at the present day extra expenses in most cases have to be cut down rigorously.

It is most useful for those who are familiar with the use of carpenter's tools to do their own repairs. A split in the wood can be doctored with a little glue, and the weak place be mended in many cases; so that the whole camera is strengthened, with the addition of tiny brass plates and corners. These are to be bought ready-shaped of either Lancaster or Sharp and Hitchmough, and only require a little neatness to be fitted into their places in such a way that the camera is made much stronger, and also the look is much improved.

Leaky slides may also be tackled by the addition of strips of ribbon velvet at the points where the slide enters and leaves the framework. This is fixed in place with hot, strong glue, and a slide which some would throw aside as worthless is made almost as good as new. The price of a new slide even for a quarter-plate camera is rather high, and if the damage can be put right with a pennyworth of glue and half a yard of velvet the saving is not to be despised.

When a camera has been used for a season it will often show that though good in the main it has faults which are a constant drawback to the success of the picture-making. Some years ago I became the owner of a camera with every imaginable movement, and especially a swing front.

This is a great advantage when it will keep its place, but this particular one would always swing at the wrong time. As a result, the camera was never to be depended on. But when a rigid front was substituted from an old camera, then there was nothing left to be desired.

An old camera picked up at, say, a rummage sale will often prove a most valuable acquisition to any handy person. It is most probable that the bellows are torn and worthless, but the brass work—if of good quality—can be detached and used to replace bits on the other camera which are slack from long wear, or otherwise unsatisfactory.

Old plates of shaped brass, old racks and pinions, old swing back-fittings, and the various nuts and bolts—all of these can be taken off the cast-off camera and set aside till the time comes when they can be worked into the construction of one or other of the many photographic requirements which cost so much if purchased at a shop, and which cost but a fraction when made at home.

For another thing, the fitting of a camera to suit individual tastes is a great

help in work. It teaches the photographer to think, and cultivates those powers of invention, for which the Anglo-Saxon race has always been famous.

The fitting-up of a tilting table is one of the most easy things possible. Actually, this consists of a couple of thin bits of mahogany connected with two or three ordinary long hinges set side by side and a couple of slotted plates of thin brass which may be had of either of the firms named from 1s. 3d. to 1s. 6d. the pair. The plug-nuts and milled headed screws come to about 6d more at the most, or they may be adapted from the derelict camera before-mentioned, in which case they cost nothing.

There is an idea that home-made apparatus is always heavy and clumsy. Of course, a great deal depends on the workman, and he may be bad or good in this as in other things. But generally when these re-fitting operations are carried on at home, the camera is better equipped for hard wear than when a brand new cheap one is invested in. In photography the best policy is to go to a first-rate firm for the camera, and if this cannot be done it is well to pick up a good make second-hand. But often a cheap camera, by dint of careful addition, may be made to give first-class results at a very moderate price.

The present fashion of using a blind shutter is to fix it behind the lens and not on the hood. The general run of isochromatic screens are arranged to clip on the lens hood, and thus the shutter is ousted.

There is little difficulty in fitting a wooden time and instantaneous shutter to the camera front if the precaution is taken to fix a piece of black velvet in between the polished wood of the shutter and the smooth surface of the camera front. If the velvet is omitted, the joint is not light-tight, and mysterious fogging will attack the plates.

The velvet can be attached to the camera front by aid of seccotine or rubber solution. The panel of the camera front should be removed, and the shutter held firmly in position whilst the screw holes are bored in the wood by aid of a fine bradawl.

Considerable care has to be exercised in this operation, so that the tool does not come in contact with the blind, as a hole in the fabric would be disastrous. Once the holes are bored it is most workman-like to recess the tops, so that the screw heads will lie flush with the wood. To do this, it is usual to employ a "rose-head countersinker," one of the stock tools supplied with every set of brace and bits.

The attaching screws should be very short, and have a coarse thread so as to grip well on to the sides of the hole. A very good steel screw for this purpose is the quarter-inch No. 5. It has a broad flat head, and no tail to speak of, so that it cannot pass into the shutter so far as to injure the blind. At the same time, it has such a grip by reason of its coarse thread that it will hold the lens and shutter safely, even though the former be one of the heavier anastigmats.

Astronomy.

FALLING STARS.

By Norman Lattey.

ON November 8th last the daily papers reported an account of two remarkable meteors seen off Cape Race. One of them was seen by the chief officer of the steamship "St. Andrew," which he stated fell into the sea less than a mile from his ship, leaving a long trail of fire behind. Clouds of steam rose up when the object—estimated at 15 feet in diameter—struck the water. On the same night the captain of the steamship "Brazilia" witnessed a similar occurrence. Early during the present month the Cunard liner "Campania" also appears to have narrowly escaped being hit by a large aerolite, which fell into the sea only 300 yards away on the port side.

It is not beyond the bounds of possibility that the striking of a ship by one of these "bolts from the blue" may be the solution of more than one of those mysteries of the sea which are posted at Lloyd's from time to time under the tragic head of "Missing."

The term aerolite is derived from the Greek words *aēr*, air, and *lithos*, a stone, i.e., air-stone. They were long regarded by the ignorant as thunder-bolts generated in the clouds. Doubtless, also, the sacred stones of the ancients were aerolites.

It was really not until the beginning of the nineteenth century that their actual nature was discovered. Specimens of various types can now be seen in most museums, "blackened and wasted samples of immeasurably distant globes," as that gifted writer, the late Miss Agnes M. Clarke, aptly styled them.

Happily for us, comparatively few of these death-dealing fragments survive their headlong flight through our protecting atmosphere. In fact, considering the number of "shooting" or "falling" stars seen throughout the year (not to reckon those that silently dart across the sky unnoticed or in daylight), it may be said that the passage is very rarely made.

The fierce heat generated by surface friction with the air acting as a break as these projectiles from space, caught in our atmosphere like a fly in a spider's web, are dragged downward, is soon communicated to the whole. In a few seconds the temperature is raised to glowing incandescence and the erstwhile frozen mass is being dissipated in the form of metallic vapours. Long before it can reach the ground its conversion into gas has been completed, and to human eyes it seems to fade away.

At times, however, the original mass is sufficiently large to endure to the end of its fiery journey.

The composition of aerolites is very similar to that of terrestrial rocks. They almost invariably consist of such familiar elements as iron, nickel, carbon, sulphur, hydrogen, etc., besides a multitude of compounds, but their origin is still unknown. Probably they are the fragmentary remains of shattered worlds doomed to circulate round the sun for countless centuries in the track of the original globe of which they once formed part.

Valuable specimens have more than once been the subject of actions in the Law Courts to decide ownerships. A certain legal tribunal a few years back, unable to come to a definite conclusion, finally decided that they came within the category of "game"!

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The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MARCH 23, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 6d.; to places abroad for 9s. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association. All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application. The Editor cannot be responsible for unsolicited manuscripts or illustrations. Every endeavour will be made to return rejected contributions when stamped and addressed envelopes are enclosed; but the Editor cannot enter into correspondence in regard to them. All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E. C.

A Hebridean Headland.

By J. C. ADAM.

C. AND I, bent on bird study, sojourned on summer on an inner island. For the most part it was a wild, treeless waste of flatness, given over to the plovers and the common gulls and the terns, whose nests were mingled promiscuously together, and whose concerted shrieking was the incessant accompaniment of the wayfarer. But the island held a loadstone for the bird-lover in its headland—Ben Ceannabhana—and day after day it drew C. and me inexorably eight long, straight miles across the island from the shieling where we stayed.

I remember how we first came to Ceannabhana one Sunday afternoon—a wild day when the wind was strong from the west and the white horses were gleaming in the offing. We approached it from the east, unaware of its greatness, and beheld the first wild scene on its western face with a suddenness which took our breath away. We had made a diagonal cut for the headland's apex, and, topping the brow, stood all at once exposed to the full blast of the wind and in the presence of the sea. At our feet the ground fell away in a rugged, naked slope to a gigantic pile of *débris*—some portentous landslip of bygone days—while out from the headland rose great rock stacks, round which the sea surged and broke in foam and spume. Buffeted by the wind, we scrambled downward until we beheld a long line of towering precipice running out of sight into a gorge, and emerging again to form a protruding rampart of rock, dotted with the white forms of sea-fowl, laved by the rebounding, churning ocean. The air was filled with the hurryscurry, the weird cries of birds; that, if anything were needed, completed our enchantment.

Being Sunday, our total equipment consisted of field-glasses, and, after a consideration of all the reachable parts of the bird-nursery—this in view of the morrow—we espied a transverse ledge leading upwards along the cliff wall to its summit. We climbed to this, and then fought our way upward in the teeth of the wind and amid the clamouring gulls, whose nests were strewn on every convenient shelf and came in our way many times, until we reached the top. Then we moved westward along the edge of the cliff till we came to a wide gulf where the cliff swept suddenly inland and brought us to a momentary halt. Scarcely had we halted when out from the abyss beneath, amid a cloud of swirling gulls, leapt a falcon straight as a gunshot skyward. Hardly a second later its mate followed as swiftly. In angry, beautiful circles they swept and screamed above us, now hovering with wings outstretched, again descending like plummets cliffwards. We knew them at once: there is no mistaking that lord of the sea and air, that master of flight, the peregrine. Only the bird-lover can understand the rapture of C. and me as we gazed our fill on a pair of that grand species who have long been banished to the uttermost parts of our islands, and who even there have sometimes dire need of all their courage and wariness.

"There must be an eyrie in the gully," was the simultaneous

thought of both of us, and we struggled down to a narrow platform where we had a better view of the opposite crags, and scanned them eagerly. C. spotted the position with the glasses, and then gripped me in excitement.

"Young peregrines! Look!"

I seized the glasses and looked, and shall never forget the picture: two young peregrines—noble little fellows, with maybe the blood of uncountable generations of Ceannabhana peregrines in their veins—standing upright on a broad ledge in a big crag. One had his back to us and his head turned round as if to discover the cause of the commotion and the abrupt departure of his parents; the other, partly screened by his brother, was looking unconcernedly into space. But it was the lordly bearing, the air of rightful dignity of the little fellows which captivated C. and me and set us longing for a closer acquaintance. C. declared the eyrie vulnerable, and, after a discussion of ways and means and a last look at the screaming, wheeling parents overhead, we started homeward, for the day was waning.

Next day—aye, and on many days after—we plodded the eight long miles to and from the headland. There were half a mile of cliffs to explore—great frowning buttresses seared and torn by the ceaseless grind of the tide and the rheum of Atlantic weather; deep, black chasms where titanic convulsions seemed to have wrenched the headland open and given the sea access to its vitals; Cimmerian caverns where the foot trod softly on an age-accumulated floor of guano, and where the flare of a match would rouse a myriad rock doves and send them forth in headlong panic.

Perhaps the greatest day was when we stormed the peregrines' eyrie and came to close quarters with the youthful falcons. This was an affair of the first magnitude, and demanded all the skill and nerve at our disposal. We descended from above, with thirty feet of thin rope for bad corners and moral support. The site of the nest was well chosen under a big rock, partly overhanging. We managed to get round this, and then approached gingerly along a ledge somewhat below the eyrie. What a view there was from there! Three hundred feet below us was the sea, distant and blue. How sonorous sounded the roar of the surf on the jagged stacks beneath, and what a panorama of clouds above! We seemed to be hanging between sea and sky. Every now and then a shadow passed swiftly across us, and a harsh chatter rang in our ears, and we knew that the parent falcons were angered almost to the point of attack.

And what a fierce reception we got from their progeny! They were almost fully fledged, with the true black eye and the true spirit of the falcon, and a strange speech of their own. The situation was too precarious for argument, and, although they repeated the same statement (doubtless as to our disreputable character, for we had nothing on but an old pair of knickers and a sweater) without variation and without intermission for nearly three minutes, we forbore to contradict them. The eyrie was a projecting clump of sea-thrift, worn bare into a broad, hard platform, and littered with the indigestible remains of its owners' prey. A mutilated kittiwake led us to believe that we had interrupted lunch at the peregrine's domicile, but when C. proffered a savoury-looking portion of it as a propitiatory offering for "Masters Algernon and Augustus" he provoked such a storm of indignation and abuse that we hastily decided to beat a retreat. I remember yet the haughty mien with which these scions of the noble house of Ceannabhana peregrines watched us until we climbed out of sight.

Then there was the time when we strove, by fingers and toes, from rift to rift, from crag to crag, until we had gained the very heart of a great congregation of sea-fowl, where every ledge and fissure held a nest and a bird, where the air was darkened by a constant coming and going of birds between sea and cliff and cliff and sea, and where the noise of their cries drowned the boom of the waves. There were kittiwake gulls in abundance populating all the tiny open ledges; there were guillemots packed in serried rows, and razorbills looking down from nooks and crannies all over the cliff-face wherever there was room for their solitary big egg. These all lived in harmony. Higher up, however, were herring gulls and lesser blackback gulls—the strong, big thieves of cliffdom, the undesirables who make life a burden for their weaker brethren. What havoc they work on all the headland colonies was plain from the prodigious number of broken egg-shells scattered all over the rocks, and especially numerous on the grassy summits. Those rascals, the hooded crows, take part with the gulls in this work of devastation, and are probably even less scrupulous, plundering when it pleases them the nests of these big gulls themselves.

The Romance of the Crystal.

By I. BERKWOOD HOBSBAUM, F.C.S., F.S.A.

TO see, and yet not to see, is, unhappily, the lot of most of us at times, and this defect hides many of Nature's wonders from us, more especially those too small to force themselves upon our untrained observations. For this reason the beauties of the crystalline forms assumed by most solid bodies often pass unnoticed.

The nature of these forms, however, is so diversely beautiful, their outlines so

of these systems, *i.e.*, its form may be traced to only one of the parent forms, but some solids crystallise in two or more systems, and are then referred to as Di, Tri, or Polymorphous.

The optical properties of crystals are most marked and characteristic, and the reflection of sunlight from their smooth surfaces, sometimes accompanied by peculiar iridescence, gives them a marked and singularly beautiful appearance.

There are two ways in which crystals are formed—the dry way and the wet way.

In the dry method of crystalline formation, advantage is taken of the property that bodies have of assuming the crystalline form when allowed to pass from a molten to the solid state. This is accomplished by heat, which, when applied to certain bodies, causes them to melt. On regaining the solid form they assume their crystalline nature.

Many bodies assume the crystalline form with difficulty, as, for example, carbon and quartz. Carbon, when deposited from molten iron (as seen in some varieties of iron when fractured) appears as minute crystals of

graphitic nature. Meteoric iron contains crystals of graphite of similar nature. The formation of the diamond has been similarly accounted for. It is in this dry way that the crystalline appearance of rocks and minerals in the earth's surface is accounted for.

Snow is formed also in a "dry" way by the rapid cooling of water vapour to freezing point or below. When water vapour in the air comes in contact with a cold layer of air sufficient to freeze it, crystals of water are formed if the freezing is rapid enough. If slower rain is formed, and then hail. Thus, crystallisation can be caused by rapid cooling of the vapours of a body without passage through the liquid state.

The vapours of camphor, naphthaline, and sulphur, etc., are similarly crystallised, and the beautiful effects of these crystals so produced are worthy of note, especially the foliage-like arrangement of the crystals.

The "wet" method is that by which a soluble body is deposited in crystalline form from a solution of that body by removal of that solvent, rapidly or gradually.

The removal may be caused by evaporation, by exposure or by boiling it off. On cooling in the latter case the crystals are formed singly or in clusters, according to the circumstances under which they are thrown down. The great deposits of salt in various parts of the world, of nitre,

Epsom salts, and other soluble salts are produced in this wet way.

When the crystals occur in clusters the play of light on their polished surfaces, the multifarious colours produced by the optical properties of the crystals and the beautifully-moulded symmetrical shapes that make up their being, combine to produce an effect which is at once striking, beautiful, and wonderful.

The first illustration of camphor crystals formed on the inside of a glass bottle, shows well the crystallisation caused by vapour condensation (in this case by extremely slow evaporation).

The condensation (or sublimation) takes place on the coolest possible part of the glass, and if the crystals are evenly spread over the inner surface to begin with, an exposure to sunlight will gradually penetrate them in the coolest spot. This evaporation is similar to the gradual surface evaporation of liquids, which property is possessed by easily volatile solids.

The second photograph shows the arboreal form assumed by silver when deposited, by means of copper, from a solution of silver nitrate slightly acidified. The effect is peculiarly pretty, and in actual appearance presents the view of a number of silver tree branches, in all directions, on a trunk of copper. The metallic lustre on the silver is not always



Photo.]

Camphor Crystals.

[G. Parkin.

These have been formed on one side of the inside of a bottle.

shapely, and the laws underlying their symmetrical structure and properties so definite and immutable, that the wonders revealed by their study—the Science of Crystallography, as it is called—affords ample opportunity for admiration of one of Nature's little-known beauties.

Crystalline forms may be noticed immediately around us, as, for instance, in the common salt of household use whose particles have the form of perfect cubes, and in sugar whose crystalline form is that of a rectangular prism.

Crystallography considers crystals as belonging to seven families according as they are modifications of each of seven different primary geometrical models.

The first of these families or systems is called the regular or cubical system, in which all the crystals are modified forms of the simple cube. These modifications are produced by removing, in a symmetrical manner, successive edges or corners (or both) from the cube or further removing the corners produced by the first operation and so on.

By this means innumerable figures, which are symmetrically mutilated cubes, are produced, all of which possess the fundamental, geometrical, and mathematical properties of the cube. The other systems are similar modifications of other primary figures as the elongated cube or rectangular prism, the hexagonal prism, and hexagonal pyramid.

A body usually crystallises in only one

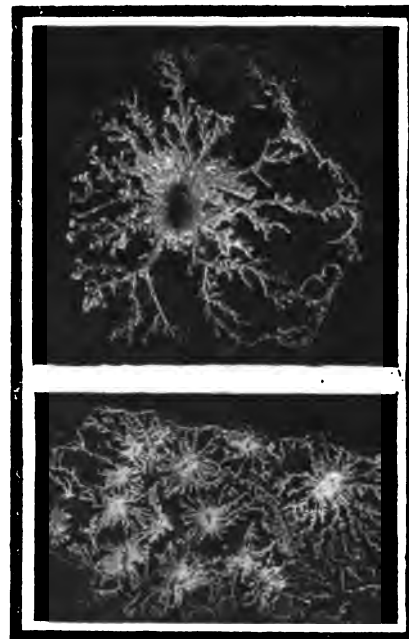


Photo.]

A Pretty Pattern.

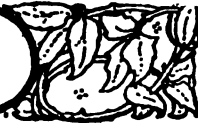
[G. Parkin.

Crystals caused by dropping acidified nitrate of silver on shreds of copper, placed on glass.

present, depending on conditions, sometimes a greyish deposit being obtained. The reaction is an electro-chemical one, and though, generally speaking, all metals may be thrown out of their solution by somewhat similar means, it is only in special instances that a crystalline-looking formation is shown. More often than not a pulpy powder is thrown down.



Livestock for Profit and Pleasure.



POULTRY.

By "CHANTICLEER."

Faverolle.

THE Faverolle fowl is the favourite table fowl of France, and occupies the same position across the Channel as the Sussex breed does in England. It supplied a long-felt want in the Paris markets, where small fowls, quick growing birds are always in demand.

Faverolles, although they now breed fairly true to type, make no pretence of being a pure breed, but it is the result of the poultry breeder's persistent crossing of varieties which would produce a chicken that is easy to rear, quick to grow, and yet has tender and juicy flesh on a massive frame.

The fowl under notice has been manufactured from the judicious use of four excellent breeds, *i.e.*, the French Houdan, English Dorking, and the Asiatic Brahma and Cochin—an excellent combination; and it is not surprising that the Faverolle attains a larger size and weight during its chickenhood than many of our finer breeds.

General Characteristics.

It will be seen from the illustration accompanying these notes that the Faverolle owes its chief characteristics to the deep-bodied, shapely Dorking, which gives it the strange addition of a small beard and whiskers or muffling, also a crest.

The Dorking blood is conspicuous by the white legs, five claws, dark breast, and the single comb; whilst it is from the Brahma or Cochin that the feather legs are obtained; also the brown eggs and massive frame which the Faverolle displays to advantage.

My preference of the several types seen is the salmon Faverolle, which is much admired in the poultry world, and especially the show arena, where many very handsome birds are exhibited every season.

The standard of excellence demands a red face, partially concealed by muffling, which in the male bird is black, ticked with white; whilst in the hen it is creamy white. The hackle is straw or creamy brown, showing striping in the hen.

The cock must have a black breast with straw coloured wings and black bars, but in the hen a beautiful soft colour, light wheaten brown back, shoulders, wings, and tail is seen, with creamy breast, thigh, and fluff. The legs are short, wide apart, the shanks being of medium length, stout, and sparsely feathered down to outer toes, which are five in number, the fifth toe clearly divided from the fourth, the outer toe being sparsely feathered. The average weight of cocks is 7 lb. to 8½ lb., hens being about a pound less.

Breeding and Rearing.

In taking up Faverolles, I would warn readers against damp or marshy ground,

which will greatly prejudice this breed of fowl, or, in fact, any feather legged variety. (But let me here state that for such surroundings the buff Plymouth Rock will succeed admirably.)

March is an excellent month for breeding Faverolles, and to be successful I advise pullets—say, three or four—being mated up to strong, vigorous two-year-old male birds of the deep bodied broad shouldered Dorking type with as little leg feathering as possible, who should be fed plentifully on meat diet before being placed with the hens.

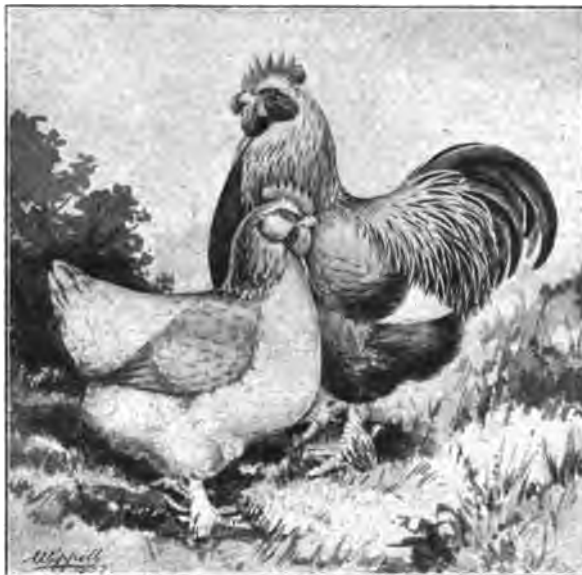
See that the birds have plenty of loose litter in which to forage, whilst if any out-houses can be utilised so much the better. I cannot advise Faverolles to those whose accommodation is limited, as this breed

allows the breast bone to rest properly and the claws to grip the perch. It will be found that ordinary tiling laths, with the edges nicely rounded, are very suitable; also fir poles from two to three inches in diameter, if ripped down the middle and well trimmed, are excellent. All perches should be saturated with kerosene or ordinary paraffin, the solution being well sluiced into the sockets and cracks, so as to prevent the red mite from breeding. Perches should be movable, to enable them to be cleaned occasionally.—(to "Inquirer.")

Hen Troubles.

Your fowls which died were apparently egg-bound, and in pecking the feathers from under the vent the birds were trying to relieve themselves. It will be found in

the majority of cases that such fowls have been suffering from overfeeding or fatty degeneration, and the fat in the oviduct prevents the bird from performing her natural functions. In such cases a teaspoonful of treacle and a teaspoonful of sweet oil must be given every two hours until the egg is expelled. Afterwards bread and milk should be given. To reduce fat in poultry Epsom salts should be given in the drinking water (a teaspoonful to every six fowls), and the birds compelled to scratch for their grain (small), which is scattered overnight in plenty of straw or loose litter. No other food should be given, and the quantity of grain restricted to two handfuls per bird each day. Plenty of green food should be given at mid-day, whilst finely-chopped butcher-bones may be given twice a week.—(to F. M. Kniveton, St. Bernards, West Kirby.)



Salmon Faverolles.

A quick maturing table fowl.

enjoys liberty, but must have plenty of shelter from wind and rain; also warm night-houses with peat moss bedding if possible.

Young Faverolles should not be pampered, being exceptionally hardy if kept dry and sheltered from the east wind. If a quick growth for the table is desired, it is advisable to feed early and late for the first few months, and to ring the changes on Spratt's chicken meal, oatmeal, sharps, and, after the first month, ground maize and buckwheat for the morning meals; whilst as afternoon feeds there is nothing better than Spratt's Chikko. Faverolles are fit to kill at three months, and should then be of a marketable size, which may be increased by being confined to cramming pens for a week or two.

Poultry Queries Answered.

Fowls' Perches.

Perches should not be round, but flat, and about 2 in. broad by 1 in. thick. This

Starting Poultry Keeping.

Your six-foot square fowl-house is about right, providing you have allowed ventilation at top, and with a 26 feet by 12 feet covered run will accommodate about ten fowls. A small portion may be left uncovered, being simply wired in. If in a sheltered position, and the scratching shed system adopted, Minorcas or Anconas will answer admirably for egg production, but the former is preferable. Pullets from a record laying strain can be purchased at about 7s. 6d. each, and a cock or cockerel about 12s. 6d., all pure strain.—(to K. Pratt, Leith.)

DOGS.

AN influentially-signed petition, presented by Mr. W. R. Temple, has obtained recognition for the toy bull terriers from the Kennel Club, and they are now registered on the books as bull terriers (miniature). Among the signatories are Lady Knollys, Sir Henry and Lady Evelyn Ewart, and the Countess of Erroll.

Dogs.

(Continued from page 278.)

The Kennel Club balance-sheet for 1906 shows a balance, after deducting £500 for reserve fund for establishment, a credit of £247 5s. 7d. As an evidence of the popularity of the registration of dogs' names and pedigrees, the sum of £2,343 1s. 6d. stands in the receipts as obtained in fees for this purpose for the year, while £443 discloses the proportion of transfers of dogs from one owner to another, roughly, as about 3,700 during the year.

The *Kennel News* gives in a recent issue a capital study of tails. The bulldog being the breed selected and exemplified by Mr. Hay Hutchinson, with such diagrams as he gives, before them, amateurs should make no mistake in the correct carriage and shape of the tail of a prize bulldog. The same paper tells, also, of an interesting controversy going on in the German papers as to deafness in white Great Danes, and how curiously it happens that if a white dog has the blemish of a black spot, however small, it is saved from the otherwise hereditary deafness.

The forthcoming show of the Pomeranian Club will be held in the London Scottish Drill Hall at Buckingham Gate. The show committee is appointed, and there will be fifty-nine classes, which will give every section of weight and colour a great opportunity for distinguishing themselves.

The craze for Pekinese is not waning; on the contrary, the breed seems to increase in favour, while maintaining its excessive high value, for owners of these high-quality dogs think nothing of asking £100 to £350 for the best specimens, and ten guineas for a puppy is a "giving-away" price.

The Borzois and Great Dane show at the Crystal Palace takes place on April 25th. The L.K.A. annual show at the Botanic Gardens on July 11th and 12th, and the Richmond Show on June 21st.

The ethics of the judging ring forms the theme of an article in the *Kennel Gazette* for February. It is written by Mr. Walter S. Glynn, whose qualifications and experience as a judge should have proved a useful education on this subject.

CATS.

Buying and Selling.

BELIEVE a Bow Street magistrate once asserted that anyone owning a stud dog or selling a dog was, in point of law, a dealer. I do not know if the same decision would apply in the cat world. Anyhow, there are few fanciers who do not desire at some time or other to dispose of their cats and kits.

The best way to set about trying to sell them is to advertise in those papers that deal with live stock. It is advisable to fully and fairly describe the specimens, and to name the price required. Naturally, for unknown fanciers it is more difficult to effect sales through advertisements, and in their case it is necessary to offer to send on approval at the would-be buyer's risk and cost.

In purchasing a cat or kitten it is very important to ascertain how it has been fed, so as to continue the same régime for at least a few days. The pedigree should be sent at the time of purchase, and it is much easier to fill this in on a properly-drawn-out form, and certainly it is pleasanter to receive the particulars thus intelligently written out.

There are some buyers who, finding a cat to suit them, pay the price and are satisfied. There are others who are never satisfied and blame the seller for everything that happens, either on the road or after the kitten is received. It is very seldom that a kitten taken from its surroundings and sent on a long journey will come out of its hamper looking just as the new owner expected. Tired,

homesick, and frightened, she will not show off to advantage, and is often a pitiable-looking object.

It is only fair to give the new member of the family a little time to settle in and settle down before writing a letter of complaint. Sellers must be cautious in sending out their stock, and buyers must not expect too much.

An excellent method of disposing of really good kittens is to exhibit them at the leading shows. There is always a certain amount of expense and risk involved, but to make money money must be spent.

The risk, of course, is much less if the owner is able to accompany the exhibits. It is best to price cats and kittens rather higher when wishing to dispose of them at shows, as there are the entry fees and commission to be taken into consideration. A good photograph of any kittens for sale may, with great advantage, be reproduced in one of the cat papers at a small charge. This often acts as a capital advertisement.

Then, again, picture postcards are very handy to forward to likely purchasers, and may be the means of effecting a sale without the trouble and risk of sending live stock on approval.

CAGE BIRDS.

Popularity of Mule Breeding.

EVERY year the breeding of mule birds, or hybrids, seems to become more popular, so that to-day quite a goodly proportion of the cage bird hobby are mule breeders. The number of varieties successfully raised also increase year by year, and few years pass by without seeing some new variety not previously bred placed on record. We also have several established varieties, well-known, and no longer classed as extreme rarities, which, not so long ago, were believed to be unattainable. Of these the bullfinch-canary is one of the best known. But the chaffinch-canary around which many years of hot controversy raged, still appears to be very much in the nature of a vision and a hope. The variety is said to have been bred on the Continent, and in this country there have been numerous claimants to success in raising the variety, but, unfortunately, such claims have never withstood expert investigation.

"Mule" or "Hybrid." Which?

To the ordinary student of Nature, these two terms are usually regarded—and, we think, rightly so—as synonymous. But in the cage bird hobby they are generally employed in a different sense. After much talk, and some confusion, there has come to be a balance of opinion in one direction, and now, it may be well to say, the term "mule" is most generally applied to such varieties as have the domesticated canary for one of its parents, and the term "hybrid" to varieties between two distinct species of either British or foreign birds, in which the domestic canary plays no part.

Varieties of Mules.

Of cross-breeds claiming the canary as one parent we have a good selection, and it is with these varieties that the beginner should enter the list. Excepting the chaffinch, which is considered a typical finch by some authorities, and its near relative the brambling, practically all the British finches will mate readily and successfully with the canary. In a general way they may be placed in the following order as regards the ease with which they may be bred: goldfinch, linnets, siskin, greenfinch, bullfinch, and redpoll. The greenfinch might easily stand first but that his rough courting often causes disaster in a cage; in an outdoor aviary he stands higher. The difficulty of crossing the redpoll with a small hen canary lies not so much in getting the birds to mate as in rearing the tiny mites of youngsters. In all cases, a male finch should be used with a

hen canary, as one requires a fair amount of experience before attempting to breed with hens of British birds, and even then, except in very rare instances, one must always use hen canaries as foster parents for the young.

Preparing Finches for Mating.

This is a matter that requires some attention. It is only by a very lucky chance that one can hope to put a pair of birds into a cage haphazard and get good results. The finch especially must be in good, sound, healthy condition, and in full song. It is just so much waste of time to attempt to mate a finch in an unfit condition, so that the next few weeks should be devoted to getting them into the best possible condition. To accomplish this, there is nothing better than feeding the birds liberally with their favourite wild foods which may be gathered in the fields and hedgerows, and adding thereto sprays of plants covered with green-fly, or aphides, rose-blight, or small green caterpillars, or even the commercially-raised mealworm. The latter, must, however, be used sparingly—not more than one or two a day—as they are very stimulating.

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Hardy Annuals.

A KNOWLEDGE of hardy annuals and their capabilities in the garden is of great value, especially when a display has to be made for a small outlay. It is surprising how much may be done to render the garden beautiful for at least nine months in the year by the man who knows how to spend to the best advantage a few shillings on seeds. For an early display he would sow seeds of hardy annuals in autumn, and it is surprising how much may be gained by this method.

Generally the spring sowing is made in March, when the soil is loose and the weather favourable. The seed should be scattered very thinly and evenly, raked in, or, better still, covered with a thin layer of prepared fine soil. This is only the beginning, although many people appear to think that it is also the end of the operation. Annuals are thin and poor as a rule, because they are much too thick on the ground. Half a dozen plants, if allowed space, will give a better display than six times that number when crowded.

The principles of good kitchen gardening must be applied to annuals if the best results are to be achieved. It is, therefore, necessary, as soon as the plants are large enough, to thin them with the same care as one devotes to beds of lettuce, turnips, carrots, etc. After this a top-dressing or mulch with prepared soil containing manurial foods may be given with advantage. The attentions of birds must be guarded against, and, of course, drought must not be allowed to weaken the plants when growing. The neglect to water annuals in dry weather is too often the cause of failure. This is especially the case in light soils, where, if time can be afforded, a daily sprinkling with water should be given, unless there is a plentiful rainfall. These directions constitute the fundamental principles of high-class annual growing. They are simple enough, easy to carry out, and neglect of them generally leads to failure.

Notwithstanding their willingness to do fairly well in the partial shade of other plants, most annuals enjoy direct sunshine. Thus pansies, wallflowers, and even poppies will grow and flower under the partial shade of trees and shrubs. We have used them as a kind of carpet in

plantations, and in the case of pansies for rose-beds, with very satisfactory results.

Some annuals can only be successfully grown when the seeds are sown in boxes under cover and the seedlings transplanted at the commencement of summer. Such are China asters, stocks, lobelias, ageratum, verbenas, and balsams. Should a frame not be available for raising the seeds, boxes six inches deep and filled to within two inches with soil may be used, and, after the seeds are sown, panes of



Photo Copyright.]

[Messrs. Webb, Stourbridge.]

Giant Double Scabious.

glass laid over the boxes, to be taken off in favourable weather. By the application of a little thought and resourcefulness much can be done to supply the actual needs of tender seedlings at very little cost. The essentials are light, air, the sun's warmth, and protection from frost.

We may now take a garden where there is a considerable amount of space to be filled with plants that will make a summer display and for which annuals are to be used. Having obtained our seeds from a reliable, not necessarily expensive, dealer, and provided ourselves with painted wood labels, we proceed at once to the sowing. The soil should be loose and friable, and if it has been raked over a day or two previously so much the better. Here is a bed of roses, and a carpet of an annual with flowers of a colour that will harmonise

with the roses when they are in bloom must be selected. Sweet alyssum with white fragrant flowers would be suitable. We therefore scatter the seeds thinly all over the bed, rake it over, put in the label with name and date, and that is complete. If there are other rose-beds, mignonette, musk, pansy, white lobelia; or for a white rose, a light blue lobelia, nigella, brachycome, and gypsophila are all suitable, bearing in mind the question of colour.

Not only the rose-beds but other beds which require a carpet may be sown with such plants. There may be other beds containing bulbs which require a summer furnishing. For these, what could we have better than Phlox Drummondii, marigolds, clarkia, centaurea, coreopsis, the Indian pink, godetia, iberis, lavatera, linum, nemophila, dwarf tropæolums, and cœnotheras. The best effect is obtained where only one kind of plant is used for each bed. If tall plants are desired in conspicuous places we will select sweet peas, sunflowers, love-lies-bleeding, marvel of Peru, and the big poppies.

There are still spaces in the borders, both in front and behind, where annuals would be at home. It is bad taste to sow such things in straight rows or in any geometrical design; an irregular patch looks natural and is much more effective. Should the ground be hard, a forking over a few days before the seeds are sown is necessary. Bearing in mind the advice to sow thinly, we scatter the seeds in the places where they are intended to grow, raking them in or covering them with prepared soil as before. In positions where tall plants would be effective we may sow the climbing tropæolum, single hollyhocks, sweet peas, marvel of Peru, the tall cœnotheras, canary creeper, Impatiens glandulifera, and the annual sunflower; this last is a grand fellow when used with judgment. Pea-sticks should be placed for the climbers as soon as the first thinning has been done.

Suitable things for middle positions in the border—i.e., plants which grow about two feet high—are argemone, the big marigolds, Chrysanthemum coronarium, Coreopsis bicolor, Lavatera trimestris, the tobaccos, especially Sander's, lupins, salpiglossis, and helichrysum. We have still

(Continued on page 281.)

The Garden.

(Concluded from page 280.)

the front of the borders to find suitable plants for, but there are plenty of good things left to select from. Clarkias, the asters, and stocks coming on in the frames may be utilised here; candytuft, collinsia, godetias, linarias, larkspurs, forget-me-nots, nemophilas, petunias, from the frames, silenes, etc. The colours of the flowers we do not trouble to give, as they are supplied with the seeds.

Some of the grasses are very decorative, Indian corn, for instance, quaking grass, animated oats, love grass, and hare's-tail. These are all annuals, of which seeds can be easily obtained, and they look well in the borders, whilst they are useful to arrange with cut flowers.

We have seen a disused kitchen-garden border turned to excellent account by sowing it in spring with the seeds of annuals that gave a supply of flowers for indoor decoration throughout the summer and autumn. Only about a dozen things were grown in quantity; these were sweet peas, miniature sunflowers, gypsophila, lupins, larkspurs, poppies, marigolds, zinnias, salpiglossis, cornflower, Virginian stock, and centaurias. We have named in the above selections only those things that thrive in any garden soil and of which seeds can be obtained cheaply; most of them can be bought for about 6d. an ounce, and if only small quantities are required they are to be had from some seed firms in penny packets. All seeds are best preserved in a drawer or wooden box kept in a dry place where the temperature does not exceed 60 degrees.

Work for the Week.

Treatment of Plants after Forcing.

GHENT AZALEAS imported from the Netherlands in autumn and forced so as to provide a bright display early in the year are so popular that a few hints concerning their after-treatment will be useful. Very often they are of no profit to the gardener after their first flowering, but they are in no sense really "done for" after being forced, and this failure is due to their receiving improper treatment. As soon as they have finished flowering, remove the dead blooms and immature seed vessels. Pruning is not required. Stand the plants in a moderately warm greenhouse, and give them every attention until their young shoots are mature. After hardening off, they are to stand out of doors during the summer, and with re-potting should flower well again the next winter.

Plants of *Deutzia gracilis* are to be pruned after flowering to encourage young growths, and gradually hardened off. If re-potting is necessary, this should be done when the shoots commence to grow after pruning.

Lilacs, thorns, double-flowered plums, shrubby spiræas, and rhododendrons that have been forced may, after hardening off, be planted out in the shrubbery. In two years' time they will have recovered, and again be fit for forcing.

Bulbs after Forcing.

These are often thrown away, but they are, at any rate, quite suitable and very useful for planting-out purposes. Perhaps bulbs, such as daffodils and tulips, could be purchased very cheaply in quantity from nurserymen, who force them upon a



Photo Copyright.]

[Messrs. Webb, Stourbridge.

Victoria Larkspur.

large scale, and in this case their employment for planting under trees, etc., can be thoroughly recommended.

Fern Potting.

The collection of ferns should be carefully looked over, defects in drainage attended to, insect pests destroyed, and re-potting performed where required. A good general compost of ferns is made up of three parts of good fibrous loam, with one part of leaf mould, one of fibrous peat, and one of sharp sand. A greater proportion of loam may be used for the strongest-growing kinds, whilst more peat may with advantage be given to the smaller ferns.

Cucumbers and Melons.

Whilst but few amateurs devote a house to cucumbers, they are very popular as

occupants of frames. To provide plants for these, seeds of some such favourite variety as Lockie's Perfection or Rochford's Market must now be sown singly in small pots half filled with light, rich soil to permit of top-dressing, and placed in the warmest position available. Should the temperature of the house be otherwise inadequate, they may be plunged in a hot bed. If a moist, steamy atmosphere is maintained, growth will be rapid, and the young plants will soon require a move into larger pots.

The 'possessor of a small greenhouse would find melons both interesting and satisfying as a summer crop. As compared with cucumbers, it is a great point in their favour that, requiring a somewhat drier atmosphere, they combine better with other greenhouse plants. To raise melon plants, proceed as is above advised for cucumbers. Frogmore Orange, scarlet-fleshed; Hero of Lockinge, white-fleshed; and Ring-leader, green-fleshed, are three excellent varieties.

Vegetable Marrows.

As early marrows are highly esteemed at the table, a sowing of one of the compact-growing small-fruited kinds may now be made. Sow the seeds singly in 3-inch pots or three together in larger ones, and place these in a gentle heat. This sowing is intended for hot-bed cultivation; where this cannot be afforded sowing had better be deferred until a fortnight later.

The Fruit Garden.

The advent of the grafting season may be taken advantage of in the following manner. Vigorous apple and pear trees of kinds that are either inferior or do not thrive in the locality may be rendered profitable in the course of a few years by the expedient of heading back and re-grafting with superior varieties, large crops being obtained much quicker in this way than by planting young trees. Cleft or whip grafting is the best method to employ, and as many as thirty branches may be grafted on to one tree. Strong growing kinds should be selected as scions for large trees. Cuttings to be used as scions should be removed some time before they will be wanted and kept heeled in in a shady position, or in moist sand. Those that may be wanted of varieties not to hand should be obtainable from any high-class fruit nurseryman. It is not essential to perform the heading-back some weeks before grafting. If the gardener is not experienced in the work, it will be more profitable to employ a practised professional. This most important operation of re-grafting—and, indeed, all pruning of fruit trees—is often very clumsily performed. G. T.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on page vii.) out from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Goldfish.—To obtain success with your goldfish, place the aquarium where the light is not too strong, clean out, and give fresh water twice a week. Use washed river sand for the bottom, and introduce a few water weeds. Avoid overcrowding, and feed every other day on ants' eggs and small red garden worms chopped up fine. Keep the aquarium free from decaying matter.—(to C. J. Gordon, Edinburgh.)

Oak Galls.—These are caused by insects which lay their eggs on the leaves and twigs, a wart-like growth being the consequence, and this growth, or gall, contains the grub of the future insect, which, when mature, eats its way out. The gall is a more or less spongy growth, and it often contains a dye. The galls of a species of oak that grows in the Levant are used in the manufacture of ink as well as for dyeing purposes. The blood-red fluid that you saw may have been water that had got into the gall and become stained.—(to A. Hodley, Walthamstow.)

Calvary Clover.—This is *Medicago echinus*, a native of the Mediterranean region. It is said to be symbolic of the passion of Christ. The leaves are stained with crimson, and the fruit is coiled and spiny, symbolising the crown of thorns. It resembles our native *M. denticulata*, but is larger.—(to P. Fenton, Maryhill, Glasgow.)

Ladybird.—The seven spots on the ladybird you found on March 1st would have nothing to do with its age; insects do not change after attaining the perfect state. Its early appearance was, no doubt, due to mild weather.—(to S. Blake, Acton)

Eggs of Virginian Collin.—Attempts were made years ago to introduce this bird, and bade fair to succeed for a time, but ultimately the species died out. The covering of the eggs seems unusual.—(to A. Stubble, Beeston.)

Unidentified Waterfowl.—There is no large water bird coloured as you describe, with white body and dark head, neck, and tail. The male tufted duck would look like this at a distance, but it is a small bird.—(to "A Reader of THE COUNTRY-SIDE," Edgbaston.)

Possible Hybrids.—It is difficult to say what is impossible in the breeding of hybrids, but one between a robin and a canary would be a most unlikely product, and one between a rabbit and a ferret very much more so. Of course, every breeder would repudiate the idea, as those you consulted did.—(to H. Hamilton, Glasgow.)

Geese or Ducks?—The large grey birds you saw, flying heavily, with outstretched necks, were, no doubt, geese; but several British grey geese need to be seen more closely for the exact species to be identified.—(to A. Camfferman, Whetstone.)

Early Emperor Moth.—The moth which you send, and which emerged on March 3rd, is a male Emperor Moth (*Saturnia carpini*). Its usual time of appearance is April.—(to D. S. Still, Torhill, Muirhead.)

TO BUYERS AND SELLERS.—

See our Sale and Exchange
on the back cover.

Loofah.—A loofah (also spelt lufa, loofar, and many other ways) is the dried fibrous interior of a gourd grown in Egypt.—(to Kate B. Brackenbury, B.E.N.A., Downham Market.)

Identity of Birds.—The birds seen on the Stour Estuary, with large reddish brown heads, shining white below and on the neck, may have been, as you suggest, great crested grebes, but the grey back suits the female goosander better. Did you notice any tail? Grebes are distinguished from other waterfowl by not having any noticeable one.—(to W. B. Nichols, Stour Lodge, Bradfield.)

Primrose Sports.—Your primrose is, no doubt, a sport in the direction of floriferousness. Variation takes place in all characters, and just as the polyanthus is the result of variation in the length of scape, number of flowers and colour, so your plant may be a variation in the time and duration of the flowering period. You ought to save and sow the seeds, as the character may be inherited. Primula sports and hybrids are exceptional in their almost invariable habit of character reproduction, or, as gardeners term it, "coming true" from seeds.—(to J. Halliday, Dumfries.)

B.E.N.A.

(British Empire Naturalists' Association.)

SPECIAL ADVANTAGES FOR MEMBERS.

Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street; and 223, Oxford Street.

Messrs. Harman and Sons, hatters, 87, New Bond Street, W., allow a discount of 5 per cent. to B.E.N.A. members.

Objects and aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose 4d. stamps.

Application for membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, ed., post free. Postal orders preferred to stamps.

* All applications should be addressed to the local secretary of the district, or to Miss G. B. Norreys, Warham, Wells, Norfolk.

Changes of Addresses, etc.—All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should be notified to the Organising Secretary, Mr. J. W. Mersey, 611, Chorley Old Road, Bolton, Lancs.

To Local Secretaries.—Will all local secretaries kindly send in to the organising secretary, Mr. J. W. Mersey, 611, Chorley Old Road, Bolton, as early as possible their names, addresses, and the names of the towns and villages which are included in their districts? Also, will all the secretaries in all the other branches of the Association kindly send in their names, addresses, and the department which they have in hand? Further, will all local secretaries who have not yet sent in their lists of members kindly do so as early as possible to Mr. Mersey. This is most important.

Exchange Secretary.—Mr. Harold S. Cheavin, Clematis House, Somerset Road, Huddersfield, has very kindly agreed to become hon. secretary of a Members Exchange of Microscopic Specimens for mounting.

Collection on View.—Major Howland Roberts, Cyprus Cottage, Cross in Hand, Sussex, very kindly

states that he will be pleased to show his collection of butterflies, moths, and beetles, which he collected in the following places:—Singapore, Malacca, Penang, India, Afghanistan, Cape Town, and St Helena, to any member of the B.E.N.A. who desires. He also wishes to exchange some duplicates of the above for some from other parts of the world.

Our Badge.—Now that the motto "Beatus Est Naturæ Amor"—"Blessed is the Love of Nature"—has been decided upon, we are able to put the badge in hand at once. It would not have been wise to do so earlier, because there was always hope that the motto might be one which could in some way be incorporated in the design of the badge. Luckily this turns out to be the case, and the original design that was published and approved by our members will be modified to include it.

Another advantage of this delay in making the badge is that it has given us time to find out that the original design erred somewhat on the side of plainness and severity of outline. It will, therefore, be made at once more decorative and more typical of the association's empire-wide scope by the addition of the Imperial crown above the oval outline; and I feel sure that all members who see the amended design will agree that it has been greatly improved.

Another alteration will be that there will be no lettering on the back of the badge as was originally intended, because such lettering would be out of place upon an ornament which will be made up as a brooch or a scarf-pin, as well as a pendant. The date of foundation, "1905," was the only essential part of the lettering; and it fortunately happened that in the original design the exact place where a date should have been was filled by a row of conventional and meaningless stars.

Thus in every way the badge will be an improvement upon the original design; and, in consequence of being worked only on one side it will be considerably cheaper. Indeed I am in hope that members will be pleasantly surprised when they learn how cheaply, in view of its great beauty, they will be able to obtain it.

Branches and Affiliated Societies.—**ERDINGTON AND DISTRICT NATURAL HISTORY SOCIETY** has a very good programme of meetings. Recently "THE COUNTRY-SIDE Zoo Stereographs" were shown; on March 15th a lecture on insects was given; March 22nd, lantern lecture, "Nature's Wonderland"; April 3rd, Volcanoes, etc.; April 12th, Reptiles in Captivity; April 19th, Organic and Inorganic Life; and April 26th, "Some Foreign Birds." Mr. W. F. Wiemann, 22, Orchard Road, Erdington, near Birmingham, is hon. secretary of this society as well as of the Erdington Branch of the B.E.N.A.; and both societies are in active co-operation locally with the Birmingham Field Naturalists' Club and the South Birmingham Branch of the B.E.N.A. Mr. Wiemann will be glad to hear from local members. The meetings are held at 8 p.m. over Mr. Wedekind's Café, next door to the Public Hall, Erdington.

THE POTTERIES ENTOMOLOGICAL AND NATURALISTS' CLUB.—This energetic society—whose members all belong to the B.E.N.A.—concludes its successful lecture season on March 21st with its annual exhibition of specimens by members at 7.30 p.m. in Room 2, Museum Buildings, Pall Mall, Hanley. Mr. H. Emmett, 156, Moston Street, Hanley, will be glad to hear from members.

ILFORD AND DISTRICT.—The local secretary will be glad to hear from all members prepared to actively assist in the formation of a branch. Intending members please apply to local secretary, 38, Melbourne Road, Ilford, Essex.

LIVERPOOL.—Mr. J. M. Grant, 88, Geraint Street, Liverpool, S., will be glad to hear from others in the district willing to co-operate in forming an active branch.

SOLIHULL, WARWICK.—Mr. H. M. Owen, Cullen House, Solihull, will be glad to hear from natural history lovers, especially entomologists, who will help in forming an active branch.

GLASGOW BRANCH.—This is now working successfully; and the next meeting will be at 8 p.m. on March 29th at the St. Mungo Halls, South York Street, and Govan Street, S.S. There will be a lecture on, and a rare exhibition of, tropical fruits, also exhibitions of birds' eggs and beetles. Admission free. The hon. secretary, Mr. John S. Crawford, 287, Eglinton Street, Glasgow, will be glad to hear from members.

Identification of Specimens.—**BRITISH LAND AND FRESHWATER SHELLS** will be identified for any members by Mr. Arthur Mayfield, Mendlesham, Stowmarket. **BRITISH BIRDS OR BRITISH BUTTERFLIES** for any members, from actual specimens only, by Mr. P. P. Street, 38, Melbourne Road, Ilford, Essex. **MOTHS AND BUTTERFLIES, BIRDS AND EGGS IN THE WORKSOP DISTRICT** by Mr. J. K. Lawson, Birch Villa, Overend Road, Worksop. **BIRDS**: "I shall be pleased to assist any member in any way I possibly can in my own hobby, ornithology."—G. S. Banks, Adlingfleet, S.O., Yorks.

Exchange Secretaries—A Warning.—It has been reported to headquarters that dealers in eggs, insects, etc., have been applying to our exchange secretaries for lists of the specimens for exchange. It is hoped that all secretaries will do their best to prevent indiscriminate collecting, and be careful not to communicate the names and addresses of persons exchanging to each other.

"DAILY MAIL"
The Naturalist's Daily Newspaper.

OUR FIRST HOUSEHOLD COM-MODITY COMPETITION.

Dear Sir,—Your very practical explanation of the First Household Commodity Competition to hand. We already knew the value of Wright's Coal Tar Soap, but were, unfortunately, not aware of this great secret which it contained. Accept thanks and best wishes. — Yours sincerely, E. Cooper, 7, Orchard Road, Dorking, March 11th, 1907.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 98. VOL. 4.

MARCH 30, 1907.

1d. WEEKLY.

Some Unusual Pets.

Mongoose and Meerkats.

By FRANK FINN, B.A., F.Z.S.

THE mongoose most commonly met with at the dealer's—and no doubt the one represented in the photograph—is the common grey mongoose of India—(*Herpestes griseus*), a very com-

any raw flesh will be readily received, but a fair proportion of the last-named, and that of small animals by preference, should always form portions of the daily diet. Anyone who knows how to keep ferrets will have no difficulty with mongooses, and will find them much nicer animals—more intelligent and less blindly ferocious, though not as a general rule to be trusted with other animals.

are nearly allied to mongooses, require much the same treatment, but they are less carnivorous and not nearly so ferocious. At the Zoo they used to keep them along with the burrowing owls, and Frank Buckland used to have one which lived in the house on terms of "armed neutrality" with a "laughing jackass," the big Australian kingfisher. I should not for a moment trust the ordinary Indian mongoose along with birds like these—or any other species for that matter, in spite of the apparent gentleness of my specimen of the banded kind.

One point to be specially borne in mind

I lost the banded mongoose above-mentioned in a very sad way, it having been killed by terriers when tied up. For this reason I do not recommend this method of keeping a mongoose. The animal should, I think,

be especially borne in mind in the treatment of the meerkat is its extreme fondness for the sun; it will sit up, as shown in the photo, and bask in the sunlight in the most comical way, and with the greatest delight.

In its Nature haunts in South Africa it is a great burrower, and lives a good deal on roots. Hence I should be inclined to offer it onions and radishes, and arrange a covered run for it. The food will give less trouble than the mongoose's, less raw animal nutriment being necessary.



Photo

[E. R. Barrett.]

A Tame Mongoose.

mon beast in its own country, and one often observed owing to its diurnal habits. But there are several other species of the family occasionally available as pets.

In East Africa I once possessed a specimen of the banded mongoose (*Crossarchus fasciatus*), which was remarkably tame and amusing, and appeared to have little inclination to attack birds, although lizards met with less consideration. It had a decidedly sweet tooth, and would eat sugar-cane, and even loaf-sugar.

Eggs found favour with this animal, as might have been expected, and it was curious to note that it tried to break other objects in the same way as eggs by picking them up and dashing them down. I saw this done with such different things as a live crab and an empty cigarette-box.

It is evident from what has been said that one can offer a mongoose almost anything in the way of food; as well as bread and milk, table scraps, fruit, and almost

be only left "on chain" in an absolutely safe place or when there is someone to watch it.

Its ordinary abode should be a large hutch about three feet long, with a foot partitioned off for a sleeping-box, which should be filled with hay. The outside den should be bedded down with hay or sawdust, and the whole placed in a warm, dry, and well-sheltered position, preferably inside a well-lighted out-house.

Meerkats, which



Photo

[Mrs. Attwood.]

Patient Sitters—Meerkats.

Country-Side Notes.

"I have long enjoyed the wonders of nature; never, I can honestly say, alone, because when man was not with me I had companions in every bee, and flower, and pebble.

Rev. Charles Kingsley.—Sent by William Harvey, Eastbourne.

"MARCH may try to go out like a roaring lion, giving us in its last few days a rapid assortment of all its rough samples of 'spring' weather; but it is always a kind and useful month all the same. We do not want to be always breaking the records for 'abnormal mildness of the season,' since we always suffer for it afterwards; and it is better to be more or less nipped in the bud than to be wholly wrecked in the flower.

"When the blossoms, proper to April, unfold in January, they must take the inevitable consequences; and the dog's-mercury and periwinkle in the coppice, which presumed so far upon the absence of north-east winds in winter, are only now decently covering the shrivelled evidence of their past blunders with newer flowering shoots.

"Beside them the wood anemone—the virgin 'windflower' of windy March—makes a starry heaven of the woodland's shade, and the hellebore, indifferent to weather, still spreads its pale candelabra wide. The primrose path of dalliance in the sheltered margin of the wood is a creamy way of clustered glory, and where the wood soil slopes to dampness the wild daffodil, more beautiful in its wildness than all its costly children of the florists' catalogues, now spreads a halo in its shady shrine. Our forefathers worshipped in the woods in spring."—"The Country Day by Day," March 31st.

With the arrival of the spring migrants we shall have opportunity and occasion again to note the attachment to locality which characterises these birds. It is pretty safe to say that, if one has any means of identifying, say, a particular swallow, one will find that bird back at the identical spot it nested in last year. This love to home is not confined to migrants, but it may be seen in birds which do not wander. Thus, if a pied sparrow is observed to haunt a locality, in that locality it will be met with, keeping as closely within limits as if confined in a big aviary.

The same remark applies to birds in their winter quarters when these are situated far away from home. I know of a case in which a common grey wagtail in India—to the plains of which country this bird is a winter visitant—returned for two or three winters in succession to the same pond, about which it spent all its time. There was no doubt about its being the same bird, as its two inner quills were white, forming a white V on the back when the wings were closed. No doubt it simply oscillated annually between this Calcutta tank and the mountain or Siberian home in which it nested.

The real home of a bird is, of course, the breeding haunt, and hence the desire

to reach this, which is so conspicuous in migrating birds. But there is another factor in the motives for migration to be taken into account, and this is the point of view of the resident birds in the countries where migrants winter. As all aviarists know, birds get very quarrelsome when breeding, even when quite peaceable companions at other times, and when the resident birds of a country begin to stake out their respective claims it is borne upon the migrants that there is no room for them. This is very possibly the reason why the redwing and fieldfare leave us; they seem just as suited for English life as our resident thrushes, but it is quite possible that these prefer their room to their company.

When one comes to study the resident birds of hot climates it is frequently found to be the case that the tropical forms are stronger and possess more character than their migrant visitors. Thus, the weaver birds are fiercer and cleverer than the typical finches, and the tree-ducks are equally superior to the migratory waterfowl which invade their haunts from the North. A friend of mine in India used to say that when, out shooting, he heard the clamorous whistling of the tree-ducks on a tank he knew there would be none of the gamier migrant ducks to be got there. And, after seeing the way in which tree-ducks drive about these others, I can quite understand this.

Of course, this does not at all square with the distribution of human types, of which the finest do not inhabit the tropics. But then man, as an animal, is only one species, and in widely distributed forms the individuals inhabiting a cool climate are undoubtedly superior in many cases. It is where one comes to compare group with group that one sees the difference in favour of the warm regions; and the ease of living in hot climates is against the best human development, while the lower animals are sharpened in wits and encouraged to develop spirit by their numerous enemies.

The capture of a yellow badger brings forward again the remarkable subject of variation. The peculiarity of this specimen, in addition to its yellow colour, is the fact that its eyes are pink. Ordinarily one associates pink eyes with complete absence of pigment; but it will be recollected that in the so-called Himalayan breed of rabbits the extremities—nose, ears, and paws—are black or nearly so, the body being white and the eyes pink. Thus the pigment is concentrated away from the eyes instead of remaining in them, as is so commonly the case in white varieties. Everyone must have noticed that white cats and dogs do not have pink eyes; indeed, no white domestic animals do, except the rodents—rabbits, guinea-pigs, fancy mice and rats—and one carnivore, the ferret.

It need hardly be said that the pink eye is unknown among wild species, from which we may conclude that animals

possessing it are hopelessly handicapped in the struggle for existence. This may not be always due to the imperfect sight of pink-eyed albinos, which might make little difference to nocturnal burrowing species, for example; but the albino constitution is probably too delicate for the risks and hardships of wild life. Selection of constitutions among wild animals must be very severe, though it is less generally realised by naturalists than the more obvious selection according to form and colouration.

An idea of its importance may be gained by surveying a few of those cases in which man has induced a sort of quasi-natural selection among his domestic animals. In thoroughbred horses, for example, bred for a furious gallop over a short course, only two or three colours, chiefly bay and chestnut, are found; while dun, supposed to be the primitive colour of the horse—and certainly the wildest-looking—has been eliminated. It is proverbial that a good horse cannot be a bad colour, so here a new form of elimination has altered the colour unconsciously to breeders, as it were. Similarly, in the Aseel or game-cock of India, which is supposed to fight, with spurs cut off to avoid fatal wounds, for hours at a time, the new form of selection has eliminated most of the varied colours of barndoor fowls, and even in the hens the partridge-brown hue of the jungle-fowl, though the black and red of the cocks is retained in many cases.

This may be the reason why the highly-developed white races are found away from the tropics. The blond type, which shows some approach to albinism—if the primitive human beings were dark, as seems probable—does not respond favourably to a tropical environment, and hence has tended to spread into regions where life is harder, and where the wit and courage acquired in contending with Nature has stood it in good stead in subduing the world.

The peculiar method of some birds, notably those of the gallinaceous order, of rounding up their nests and fashioning them to the desired shape for the reception of eggs, is worth considering. You may have noticed that a hen often stands in the nest-site she has chosen and picks up bits of handy material, which she throws, apparently aimlessly, over her back, turning round occasionally. Birds that cover their eggs after laying go through the same performance. The explanation of this curious method is twofold. Examine the naturally-made nest of a fowl, partridge, or goose, and you will find the materials used for lining the nest are disposed thinly in the middle, but thickly round the edge. This distribution is arranged by the above, at first sight, aimless method, which at the same time regulates the diameter of the nest automatically. Again, if a bird stood outside her nest to cover her eggs she would not be able to remember, after she had partly covered them, just where they were. Here the mad method proves its instinctive usefulness. The owner, standing in the

middle of the clutch, throws the covering materials over her back till she can no longer see eggs, when she knows they are well and truly covered.

* * *

One of the most interesting methods adopted by plants for the perpetuation of their species is that of the violet. As the ordinary flowers open early in the year, and often in winter, when insects are few, they might easily escape fertilisation, so a second set is produced afterwards. These later flowers are called cleistogamous. They bear no resemblance to the earlier ones, and are absent in the closely-allied genus, the pansy, which, being a summer flowerer, has no need of them. Externally they are more like fleshy, pinkish buds than flowers. They are practically devoid of petals, and the sepals cover them so completely that neither insects nor rain can enter. In this case, however, insects are not wanted, for cleistogamous flowers are capable of self-fertilisation. As a rule they bear seeds in great abundance.

* * *

It is a curious fact that in some species, such as *Viola odorata* (the common sweet-scented violet) and *V. hirta*, the cleistogamous flowers are hidden beneath the foliage, while in others, such as *V. canina*, they are carried more or less erect. In the former case, as the capsule withers and dries, it splits up into three boat-shaped parts, and as these contract still further their edges approach and eventually eject the seeds between, often with such force that they are propelled a considerable distance. In the latter the capsule, when ripe, merely opens and drops out the seeds. This may seem a bad method, for it involves the crowding of the seedlings and the consequent destruction of many of them, but under the conditions it is the only one available. For both *V. odorata* and *V. hirta* grow close to the ground; they do not raise themselves above it like *V. canina*; they would, therefore, be unable to throw their seeds above the plants which ordinarily surround them, and must be content to shed them under their own leaves. That is the reason suggested by Lord Avebury for the difference between the species.

* * *

Perfectly adapted for self-fertilisation though cleistogamous flowers are, it is not likely that their complete closure is intended—solely, at any rate—to prevent interference by insects. The chief object almost certainly is to keep out water, for most of such plants live naturally in moist places, either low down among damp herbage or sometimes actually in water. Among the latter *Hottonia palustris* may be taken as an instance. It is popularly known as the water violet, but it really belongs to the primrose family. It bears clusters of ordinary aerial flowers (lilac in colour, with a yellow centre), and from this fact it is assumed that the plant originally grew on land. But since it has taken to the water, where the chance of ripening seed in open flowers would be small, it has acquired the habit of producing cleistogamous flowers also. Another change in the plant to adapt it better to its present surroundings may be seen in the finely divided leaves. This is a characteristic feature of submerged foliage.

Several correspondents send cuttings giving an account of a tame hen chough, kept in an aviary at Clapham, calling down an apparently wild male recently into her home. Of course, the chough is a most unlikely bird to occur in such a district; and may not this individual have been one of the Zoo's three specimens? These all got out of their aviary through a rats' hole recently, and only one has been recaptured. Such a bird would be more likely to go into an aviary than a wild one, and would not differ from a really wild bird in condition and appearance.

Spring Comes.

Spring comes with kirtle broider'd o'er with blossoms,

Rose-flow'r of almond, daisy-petals pink,
O'er her white breast a kerchief ruffled softly
Like foam of spray-drops at the streamlet's brink,

Her golden hair with fillet bound of amber,
Caught from the glories of the sunset glow,
And in her hands a blossom'd spray of black-thorn,

White like the mists that rise from meadows low.

Spring comes with lilting voice like note of blackbird

Heard in the morn-time from the birchen shade,

Where primrose stars 'mid tangled grass are scatter'd,

And violets breathe their sweetness down the glade.

While golden trumpets daffodils are lilting,
Heralds most splendid for their Queen to-day,
And as she comes the hawthorn buds are waking

To drift their pearl-sheen o'er her royal way.

AUGUSTA HANCOCK.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Bird-Notes from Aberdeenshire.—Winter left us for a while on February 24th; on 23rd there was hard frost and deep snow, and the 25th was a marvellously fine day. Early that morning the CHAFFINCH began his song, but was very much out of practice. The SONG-THRUSH and MISSEL-THRUSH both began later on in the day, and the latter at once found his true form. On the 27th the HEDGE-SPARROW and CORN-BUNTING were in song, and on the 26th the LARK. On 28th the LAPWINGS were uttering their nesting cry, and the OYSTER-CATCHERS were migrating inland. On March 1st I saw several CURLEW inland, on the 2nd YELLOW-HAMMER in song and ROOKS at rookery, and on 4th BLACKBIRD in song. On the 8th winter again returned, and is still (13th) with us. The LAPWINGS and OYSTER-CATCHERS have been hard put to it, and I have seen flocks at a great height returning seawards.—(Seton P. Gordon, Aboyne, N.B.)

Notes from the Bell Rock Lighthouse.—On the last day of February the twitters of LARKS or PIPITS were heard while passing overhead—the first land birds of the year. Next morning a SONG-THRUSH and a LAPWING were on the rocks at low water, and for the first week in March there were seen STARLINGS, THRUSHES, BLACKBIRDS, LARKS, and a PIED WACTAIL. On the rocks one day a very tame starling went so greedily at a piece of bread thrown to it, that it almost choked itself with the first mouthful. On the 6th a female "blackie" was on the grating of the lantern most of the night. In the snow, at 2 a.m. on 11th, a starling came to the lantern panes. A few SKYLARKS were seen this morning on the rocks. Our rarest visitor has been a NORTHERN DIVER, which has frequented the reef all this month, and has been seen every day fishing around. These birds are seldom

seen here, and have never previously been observed to stay over a day at a time. This subject is a beautiful speckled bird, but not yet in full plumage. During a gale and snow, on February 20th, a PIGEON took shelter for the night. On 22nd another was got in the meat-sate on the balcony, where it had gone for shelter, and got shut in some how. The leg-ring was marked R.P.x. 1906. 9,384. It was a strong bird, and soon left us when released. The winter-feeding DUCKS (eiders and long-failed) left on March 8th. A SEAL has been seen here nearly every day for the past week, but never has been seen to come on shore, though probably it will do so at low water during the night. One day it was seen on the surface with a live cuttle-fish in its mouth. The tentacles of the squid were clinging round phoca's head. The squid is a favourite bait for large fish; perhaps it may also be a choice tit-bit to the seal. The pleasant days of the first week of March induced one to ramble on the rocks when the tide was out. Parts of it are now covered with a green or maroon-coloured slime; others with very minute shells which grate underfoot like sand. In the pools the only fish life seen as yet are a few PROACHES. The DOG-WHELKS have not yet left their winter shelter-corners, but in several places there are a good many HERMIT CRABS on the move, the mature females being now in spawn. Many TOP-SHELLS hang by their yellow, fleshy lips from under-hanging shelves of rock, and a good many COWRIES were also seen about. The common black WHELK, which were very scarce here, are getting more numerous every year. Several yellow SEA-SLUGS were seen lying about. Poking in corners where dog-whelks are piled, many brittle STAR-FISH of different hues and sizes, and also several sorts of CRAB, come out from the shelter. If the brittle stars are handled, they are almost sure to cast part of a ray.

Animals.—WATER-VOLE: White one seen in Higham Park, Essex, March 6th.—(R. Barnes.)

ERMINE, absolutely perfect, trapped, male; brought to me.—(I. M. C., Holbeach.)

Birds Seen, etc.—HOOPED CROW, very rare in district, has spent this winter at Earl's Croome, Worcestershire.—(N. G. Hadden.)

SMALL BIRDS (believed to have been chiffchaffs) flying, in companies from 10 to 200, across water in N.W. direction in Ceuta Bay, on March 6th and 7th. Later on about five WHINCHATS and pair of YELLOW WAGTAILS settled on targets being repaired, evidently very tired.—(G. R. Chambers, R.N., Gibraltar.)

THRUSH, singing in tower of Bootle Technical School, March 9th.—(H. S. L. Grundy.)

WHITE-TAILED EAGLE: Young male shot near Nutley, Hampshire, in middle of January.—(W. Hall.)

GLAUCOUS GULL shot on Rathlin Island, February 19th; EARED GREBE shot on Belfast Lough, February 28th.—(W. C. Wright.)

Marked Birds.

BLACKBIRD: Hen, with piebald head, at Grappenhall, Cheshire, March 3rd, since paired (F. Fuller); hen, paired, seen on March 9th at Fulwood; Sheffield. It had a white head and white-tipped wings, speckled breast, and very pale bill. First marked blackbird from Yorkshire recorded in COUNTRY-SIDE.—(H. Burgess.)

PINTAIL: Seven shot in Portsmouth harbour in February last, each with a red rubber ring on the leg, but not with any lettering decipherable thereon (W. Kingdom-Murrill.) [Very likely a captive-bred brood; or someone may have been thus marking birds caught in a decoy, and then releasing them.]

Early Migrants.

CUCKOO flew past me and two friends at Llangynog on March 2nd, but note was not heard.—(H. S. L. Grundy.)

SWALLOWS have arrived at Villeneuve on March 8th, 18 days earlier than usual. BUTTERFLIES out on February 28th, also BEES, PRIMROSES, and HOUSE FLIES.—(F. I. Stone, Vevey.)

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Clutch of One Egg.—In 1904 I discovered a newly-built but empty blackbird's nest in a blackthorn hedge, and I watched it every day. The hen laid only one egg, which she hatched, and the young bird grew up strong and healthy. Is not that unusual?—R. E. HAGGARD, W. Kensington.

Grey Plover's Late Breeding Plumage.—I have a very fine specimen of the grey plover, shot at the mouth of the River Tees, on September 3rd, 1897. And yet it is in the fullest breeding plumage possible. Surely, this date was very late? Bowdler-Sharpe says, "Birds in the breeding plumage with black breasts may be obtained in May, June, and even July." The bird when shot was alone.—E. R. PATON, Sancton, R.S.O., E. Yorks.

A Floral Clock.—The floral clock in Princes Street Gardens, Edinburgh, is an interesting exhibition of carpet gardening. It occupies a sloping bank facing south, and is a source of great interest to visitors and residents alike, especially as the time for striking the hour approaches, when a crowd collects on the steps fronting the dial and waits in pleased expectancy to hear the shrill cuckoo, cuckoo issue apparently from the leafy face. The clock also chimes the quarters. Its works are connected with those of a clock in the neighbouring street, and it keeps good time. The "hands" are shallow trays filled with lobelia. When photographed they were pointing to eleven o'clock.—MISS L. E. BEEDHAM, Woodville, Hills Road, Cambridge.

Traffic in Decrepit Horses.—Thousands of horses, aged, diseased, and unfit for work are annually shipped from England to the ports of Holland and Belgium, in which countries they are used for food, or in some cases, we are told, sold to drag out more months of miserable existence at work on the canals. The cruelty on our side of the water is often very great, as the wretched animals are continually taken along the roads in a totally unfit state, suffering from wounds and lameness from various causes, so that it is a torture for them to walk. The larger number are taken across in the winter months, as there is then the greatest demand on the Continent, and the bad weather much increases the suffering on the journey, especially in the sea passage. What this is, may be shown by the fact that on January 26th, 1906, one boat took across 137 horses, 32 of whom were dead on arrival at Ghent—having had to be killed on the way as they were so exhausted by the journey. It is a crying shame that we, who profess to be a horse-loving nation, should, when our equine servants have worn themselves out in our service, consign them to this miserable end. The amount of cruelty practised on the unfortunate animal is shown by the fact that in one month

there were sixteen prosecutions by the R.S.P.C.A. for travelling horses in an unfit state, and there is no knowing how many other cases may have escaped detection. Everyone who professes the least fondness for horses should do what he can to put an end to this iniquitous traffic.—E. RICHMOND, Rockhampton, Falfield, Glos.

The Wood Pigeon in London.—The wood pigeons of London still maintain a certain amount of insularity, keeping on the outskirts of the assemblies of house pigeons, gathered round some favourite cab-rank. When put up, the house pigeons wheel away in a flock to some neighbouring building, following the ancestral preference of the rock pigeon for cliffs, but the wood pigeons always, if possible, make for trees. Where there are no trees accessible, as in the courtyard beneath my window, the behaviour of the wood pigeons is remarkable. Someone passing through the

amongst the common small birds, begins to pipe. The blackcap follows about 2.30. It is nearly four o'clock, and the sun well above the horizon, before the first real songster appears in the person of the blackbird. The thrush starts about half-an-hour later; the chirp of the robin begins about the same length of time before that of the wren; while that of the house-sparrow and the loutit occupy the last place on the list.—J. PRENTICE, Bishopbriggs. [Almost every word in the quotation is contrary to my repeated experience in recent years. The chorus of the day begins in June about 1.30 a.m., with a general outburst of skylark music in the darkness, and for a quarter of an hour or more no other bird is heard. I have often persuaded friends to sit up with me and come out in the fields to hear this.—ED.]

The Pacific Eider.—Re your illustration of a Pacific eider (male) in the COUNTRY-SIDE of this week. It seems to be a remarkable coincidence that I received, just a year after Mr. Stubbs (January 25th, 1906), an eider from a Scarborough dealer, and most probably came from Graemsay. The eider in my possession does not seem to differ in any particular from the one in your illustration, as the black V-shaped mark on the face terminates to a point just below the nostril. I would very much like to know if mine is really a Pacific eider; if so, should value it much more. I might say that I am only an amateur, and should be greatly obliged for your opinion. Constant reader of COUNTRY-SIDE since No. 1. A reply through the medium of your valuable paper would oblige. Thanking you in anticipation.—H. KETTERINGHAM, Grimsby. [In reference to the enquiry of this correspondent concerning the Pacific eider, it should be pointed out that the characteristic feature of the adult drake of that species is the presence of a V-shaped black mark on the throat, with the apex pointing towards the beak. One arm of this V is shown in the figure on page 213 of the current volume of COUNTRY-SIDE, although anyone reading the text might conclude (as apparently did our correspondent) that the black mark on the face is the one to which reference is made. It should be added that the ordinary eider frequently develops more or less distinct traces of the throat-V. There seems every probability that our correspondent's bird is the ordinary eider.]

A Mouthful of Mice.—Some years ago I saw a cat catch a mouse. She was walking off when, another mouse appearing, she immediately pounced upon it, and a third mouse met with a similar fate. Thus "puss" held in her mouth three living mice, all of which she quietly devoured. This cat was fourteen years of age at the time, and had, several years previously, lost her voice and power of purring.—G. BRACKEN, Limerick.

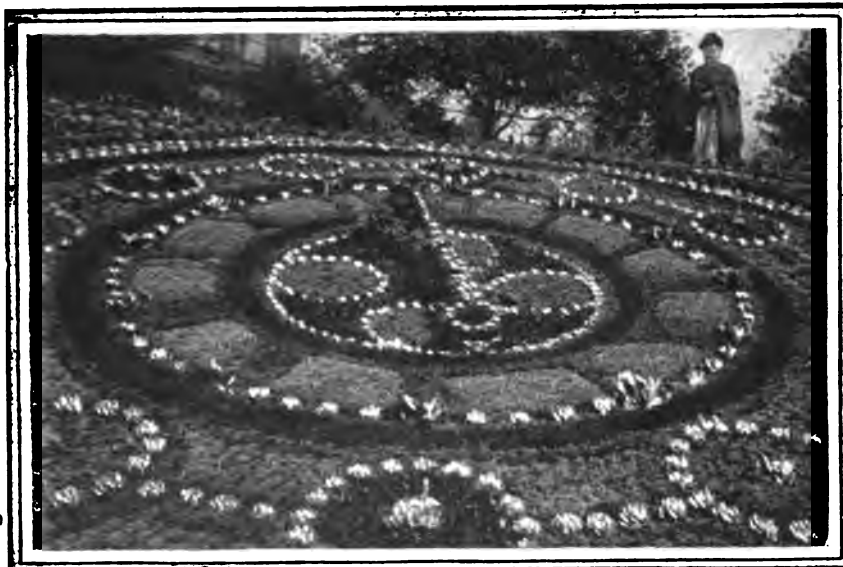


Photo.]

A Floral Clock.

[Miss L. E. Beedham.

The hands move and tell the time correctly and the hours are chimed and recorded by a cuckoo voice.

court may disturb a flock of pigeons, which fly off and usually settle on window sills and stone ledges, but if there are any wood-pigeons on the fringe of the flock they leave it at once and fly up to the very top of the buildings, one very frequently alighting on the weathercock—that crowns the end building—the other, or others (usually there is only one pair) will alight on some neighbouring stone work, but always on the top of something, either on a stone ball or pinnacle, or sometimes on the flat coping that surrounds the court. Such behaviour is most interesting, and it remains to be seen by further observation whether these habits will be retained in the species as it becomes more naturalised to a town life.—KENNETH GRAHAM, Lincoln's Inn.

When Song-Birds Awake.—I herewith send a copy of a cutting which occurred in one of the weekly papers:—"The lark's reputation for early rising is altogether undeserved," says a naturalist. "That much-celebrated bird is a sluggard, as it does not rise until long after the chaffinches, linnets, and a number of hedgerow birds have been up and about. As early as 1.30 in the summer morning the greenfinch, which is the earliest

Cats with Many Claws.—This is a very common occurrence in our small town. I myself have two cats, and I should think half the cats in the place have six or seven claws.—F. F. THOMAS, the Vicarage, Laugharne, S. Wales.

The Mole's Diet.—Most people, perhaps, are not aware that moles are very partial to carrion as well as insects. The farmers round here bury a small bird (starling, sparrow, skylark) in a principal mole-run. When this has gone, a trap is inserted in its place, and when the mole comes for another taste at the bait he receives a fatal nip.—J. B. GARNET, B.E.N.A.

Worms and Earthquakes.—In connection with the earthworms at Bath, it may interest you to know that at Charleston, S. Carolina, U.S.A., some twenty years ago, when they had a severe earthquake, people sitting out in their gardens in the torrid heat which preceded the quake were struck by the number of small creatures, some very unfamiliar, which were leaving the ground in all directions.—G. KEATING, Chesham, Bucks.

Blackcap's Parental Instinct.—I once found a blackcap's nest, on which the hen was sitting, in a gooseberry bush. The cock, who was in the tree above, flew down, and, pretending to have a broken wing, tried to draw me away. I followed out of curiosity, and when he had drawn me some twenty yards from the nest, he flew back. Each time I approached he repeated this. I can find no mention in any of my natural history books of blackcaps having this habit.—R. E. HAGGARD, Charleville Mansions, W. Kensington.

Yellow Badger.—On Monday, February 18th, at Whissendine, Oakham, Mr. Angus sent his men with Joe Wright, the sporting blacksmith, to dig out a large fox earth close to his farm buildings. After three hours' hard work they reached the end of the earth, and Wright saw what he thought was the back and neck of a fox. On trying to draw him by "the scruff of the neck," he discovered he had undertaken too big a job. However, with a rope and some iron tongs they eventually drew out a fine hog badger. He was in very good condition, weighing 27 lbs. The

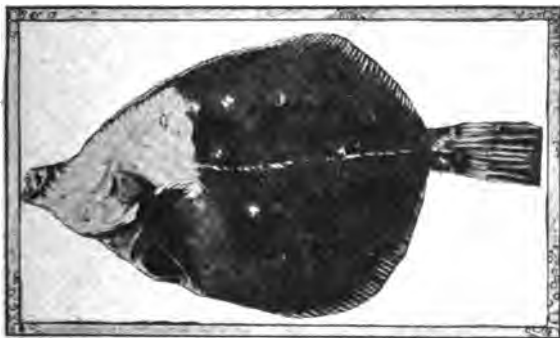


Photo.] [B. Felmingham
A Variegated Plaice.

Instead of being all white on the underside, which is here shown, this fish was coloured for the most part like the upperside, even to the red spots which distinguish the plaice.

badger was bright yellow, a shade lighter than a fox, and the bars on his face (usually black) were white. Mr. Robartes bought him from the blacksmith, and has presented him to the Zoological Gardens, London, where he is comfortably settled. I shall be interested to hear if any of your readers have ever come across a yellow badger. The keeper at the Zoological Gardens says that he has never seen or heard of a badger like him. I may mention that the eyes are pink.—K. HUGHES-ONSLOW, Braunston, Oakham. [See COUNTRY-SIDE notes in this issue.]

How Rookeries Become Deserted.—We had a flourishing rookery in our old elms for many years. In 1904, after building a few nests in a half-hearted sort of way, the birds all deserted. In the following spring they returned

in smaller numbers, and this year we have nearly as many nests as ever. I should much like to know if it is common for rooks to return in this way.—M. O. KITCHING, York. [This note has been held over since last summer until the time should come round for the observation of rookeries. Will readers who have experience of deserted rookeries this year note whether carrion crows are present?—Ed.]

The "Spring-tail" Insect Family.—The B.E.N.A. appears to offer an excellent medium for enquiry upon every branch of entomology; hence I am led to ask, with your kind permission, if any of its members are interested in the study of the *Poduridæ*, or "spring-tail" family. Sir John Lubbock's "Monograph," on *Podura* and *Lepisma*, covers all that is known of the various species, but there are many questions in the life history of the two families, e.g., determination of sex, and other points of interest remaining open for investigation. The scale-bearing species have been of exceptional value to the microscopist, as the scales of one are up-to-date, a fine test of certain qualities in good micro. object glasses. This variety (*Podura plumbea*) has for years been very difficult to find, and it would be of much interest to learn if any of the association's members have met with it. There is one other variety, the speckled podura, which has only been found in Middlesex in three places - whose scales are remarkable, and of great interest; it seems, perhaps, a matter of surprise, these two are so rare, especially the latter, and since the B.E.N.A. has members in many localities, some may have found them, or be disposed to study them. The scaled species are very attractive objects, and it is perhaps worth noting, neither podura or lepisma are injurious to either plants, woven fabrics, or paper. In the hope that some members of the society, who are always generous in assisting those of kindred tastes, may be able to supply information in relation to above, and that you may spare the enquiry a space in your excellent periodical, for which I tender thanks in anticipation.—W. FROWN, Myrtle Villa, Poulner, Ringwood, Hants.

A Curious Plaice.—The enclosed photo is from an example of the common plaice (*Pleuronectes platessa*). The plaice, it is well known, is of a greenish-brown colour above with well-defined spots of a brilliant red. In the present instance, it will be noted that the under-side, which, in ordinary plaice, is milk-white, is, with the exception of a small patch on and near the head, of a similar colour to the upper side. It will also be observed that spots of red dot the skin. I have met with plaice more or less coloured on the under-side, and here, in every instance, found spots corresponding with those on the other surface. On the other hand, when a plaice shows a patch of white above, there are no red spots, except on the coloured part. And in the case of a turbot, coloured both sides, the small, bony processes dotted about on the upper surface are repeated on the under side. In the case of a turbot white on both sides, the spiny nobs are, curiously enough, missing too.—A. PATTERSON, Great Yarmouth.

An Accomplished Starling.—I have a starling which whistles and talks all day long. It laughs "Ha, ha, ha, he, he, he." It says, "Jacob, Jacob, you're a beauty"; "Give us a kiss, kiss, kiss," then imitates kissing. It says, "Whistle, whistle," then whistles and calls the dog, "Now then, come on in Nip, Nip, Nip"; "What's the matter, eh, ch, eh?" It also whistles "There's a Dinah Round the Corner," and "Get Your Hair Cut."—M. MILDRED, Putney.

The Microscope.

ANATOMICAL SUBJECTS.

By A. H. Williams.

A REFERENCE to matters anatomical may sound to many rather horrifying as well as somewhat technical in its character, but to those who have obtained an introduction to the outlines of the study it is a branch that teems with interest.

To many workers the preparation of their own specimens is a matter that affords much pleasure and interest, but with the class under notice the average microscopist is handicapped by the fact that anatomical specimens require special



Photo.]

[Copyright.]

Vertical section of the human scalp magnified eighteen diameters.

and professional skill in their preparation.

This drawback may, however, in some degree be overcome by those who care to make a little financial expenditure, as it is frequently possible to chance upon such slides very cheaply, with which, and an elementary text-book, many a pleasant and profitable hour may be spent.

One of the foremost of these in point of attractiveness is a perpendicular section of the scalp, an illustration of which we are able to provide herewith. With so modest a degree of magnification it must be candidly admitted that it does scant justice to the original, as it is incapable of properly differentiating the various structures that are comprised. A well-cut scalp section on the stage of the microscope shows much that to the student means charm and beauty.

It shows the roots of the hairs in their normal setting, each one revealing differing items of interest by reason of the differing degree of thickness to which it happens to be cut, not only the "capillary integument" itself, with which all of us are acquainted, but also the part that is embedded.

Each hair is developed within a little pit, the hair follicle, and from the bottom of this it receives its growth. At this extremity it differs from its remainder in structure: it is larger in size, and is composed of soft-growing cells which, by increasing in number, add to the length. This hair-root is in company with a variety of other structures, such as oil-glands, fat-cells, and blood-vessels, each and all of which, under normal circumstances, add to the progress and nutrition of the growing hair.

THE COUNTRY-SIDE.

A Journal of the Country, Garden, Poultry,
Nature, Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MARCH 30, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 6d.; to places abroad for 8s. 6d. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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THE COUNTRY-SIDE,
2 and 4, TUDOR STREET, LONDON, E.C.

Animal Lore of Easter and Holy Week.

By MAUD E. SARGENT.

OUR simple-minded forefathers were quick to notice any peculiarity in beast or bird, fish or insect, tree or flower that could possibly be twisted into any religious significance, and this was especially the case with regard to the Divine Tragedy of Holy Week and the glorious miracle of the first Easter morn.

According to an old rural superstition, at daybreak on Easter Day the figure of a lamb appears in the Eastern sky just as the sun rises above the dark hills, dancing for joy, as the Irish peasants still fancy it does on this festival. On Easter morning the boys and girls go out through the dewy fields ere sunrise and mount the green hills just before the dawn, supposing that if they see this "sun-dance" in the heavens their hearts' desire will be granted to them.

We all know how the ruddy breast of the robin is supposed to be due to its frantic efforts to tear the sharpest thorns from the dying Saviour's crown, and the oddly-formed beak of the cross-bill is said to be owing to the same cause, as well as its ruddy-tinted plumage, for the bird was fabled to have hovered round the Cross, endeavouring to draw the cruel nails from the sacred hands and feet and set the Divine Sufferer free, staining its feathers red and twisting its bill crosswise in the attempt.

In Germany, where crossbills are very numerous, they are regarded as most sacred because of this strange tradition, and in the great pine forests of the Fatherland the birds are treated with the greatest respect. They are never injured, and children are warned not to destroy or rob their nests. Crossbills are sometimes kept as pets in Thuringia, owing to the odd

belief that they can take upon themselves if they wish all the aches and ailments of the household; hence these feathered scapegoats are well looked after.

According to Scandinavian legend, the swallow owes its name to the fact that it hovered about the Cross, twittering plaintively, "Swala! Swala! Swala" (Soothe, or Console Him). It is said that those who kill the pretty bird or tear down its nest will never prosper; but, unhappily for the truth of the legend, "the bird of God" was sacred in Eastern and Northern lands long before the introduction of Christianity.

Another Scandinavian legend asserted that a stork flew round the Cross crying "Styrka! Styrka!" (Strengthen, Strengthen!), and therefore the inhabitants of those Northern lands, where the handsome creature comes with the springtide, attach great reverence to it, and are delighted when it builds upon their roofs.

The turtle-dove, too, is said to have wailed over the dying Lord all through the long hours of His passion, and its cry of "Kyrie! Kyrie!" (Lord, Lord!) is supposed to be perpetuated in the low, mournful "Coo! Coo!" which echoes plaintively through the budding woods of spring.

But while some creatures are said to have lingered near the Cross through sympathy and pity, others are supposed to have done so through idle curiosity, for which they were punished for evermore. Thus the yellow-hammer is said to have built her nest close to the Cross and brooded over her eggs, regardless of the Saviour's agony, and ever since the bird is looked upon as an ill-omened creature whom it is lucky to kill. In some parts of the country a different story is told to account for the ruddy marks on the breast, which are supposed to be three drops of the devil's blood, which the bird gets every May morning, as the Scotch rhyme tells us:—

"The brock, the toad, and the yellow yeorling

Get a drap o' the De'il's bluid ilka May morning."

In Scotland the curious note, usually rendered in England by "A little bit of bread and no ch-e-e-es-e" is supposed to signify "De'il, De'il, De'il tak' ye soon."

The strange markings on the eggs look like writing in dried blood or ink, and in some districts rural fortune-tellers pretend to be able to interpret these scrolls.

In Lancashire, when the plaintive wail of the lapwing or green plover steals upon the silence of the night, the peasantry say that it is the lament of those Jews who assisted at the Crucifixion, and who, as a punishment, were transformed into these birds and condemned to dwell on lonely moors and marshlands.

In the County Cork there is a strange superstition with regard to weasels, or, more correctly speaking, stoats, which are the representatives of the weasel family in that part of the world. The country-folks say that they were the dogs which belonged to the Jews who killed our Lord, and consequently the animals, like their owners, were cursed, and became dwarfish and ill-omened beasts, ever thirsting for blood. While they dislike the creatures, however, they are rather chary of killing them, as they are said to be "knowledge-

able beasts," whose kinsfolks would avenge their death, with disastrous results to the poultry-yard.

The donkey is, of course, regarded as most sacred, because ever since our Lord's triumphant entry to Jerusalem he bears a cross on his back. Unfortunately, this does not cause him to be treated any better in Ireland, where the most starved and miserable specimens of the race draw the "butts" or carts in which poor people go to market or fair.

The idea that a child suffering from whooping-cough will be cured by placing it upon the mark of the cross on the animal's back while repeating the Creed and Lord's Prayer is not confined to Ireland, but lingers in many other parts of the United Kingdom, especially in the West Country. Hairs taken from this dark stripe along the spine, really the remaining trace of the zebra-like marks of its wild ancestors, are a common rustic remedy for various diseases.

The magpie is said to be accursed because at the Crucifixion she alone of all the birds refused to go into full mourning.

The fishy world, too, has its part in these odd tales. The pike's head is supposed to contain all the emblems of the Passion—the Cross, three nails, and the sword being visible. A German legend says that at the Crucifixion all the other fishes dived beneath the water in terror and dismay, but the pike, out of curiosity, lifted up his head and saw the whole scene.

Before concluding this article I must mention two strange legends told in Ireland concerning the blackbeetle, or clock, and the hideous cocktail beetle, or "Devil's coach-horse," whose extreme ugliness and unpleasant habit of pouring out a most evil-smelling secretion when disturbed, has won it universal disgust.

When our Lord was fleeing from the Jews in Holy Week He passed through an orchard, which at once blossomed, and next through a field where labourers were sowing corn.

Next day the apple-trees were covered with ripe fruit, and the corn sown on the previous day had sprung up and ripened and was ready for the sickle. The owner gathered a crowd to reap it, and bade them gather a basket of the ripe apples with which to refresh themselves while working. While they were reaping, the Jews, led by Judas, came by, and asked if the reapers had seen a young man of attractive appearance pass by. The labourers, knowing whom they sought and wishing to save Him, declared solemnly that since the apple-trees were in blossom and the corn which they were cutting was sown such a Man did not pass that way.

But a "daire-daol" (red devil), as the beetle is called, who was hiding in the basket of potatoes, put out his ugly head and said, "But that was yesterday." So the Jews hurried on and found the Saviour, and the captain of the reapers struck the beetle and killed it; and ever since, when the insect sees a Christian, he stops and cocks up his tail, which is full of poison, and those who kill the evil daire-daol will be forgiven seven deadly sins, but the insect should be killed either with the great toe-nail of the right foot or the thumb-nail of the right hand, and, as people believe that the creature is terribly poisonous, they sometimes allow it to go unmolested.

Amateur Photography.

Intermittent Exposures.

By F. LUMBERS.

ONE of the most valuable resources of the naturalist photographer, for whom this section of *THE COUNTRY-SIDE* is specially set apart, is the intermittent method of exposure.

Doubtless, most amateurs have heard of this method, but probably very few practise it, either from want of knowledge as to how to proceed or else, having the knowledge, it seems too complicated to be carried out in practice. In theory it may seem rather intricate, but if the following hints are taken advantage of, the beginner will not experience the least difficulty.

To come to the point, this method consists of dividing the exposure into a number of fractional parts; for example, take an exposure of one minute, two exposures of thirty seconds each, three of twenty seconds each, four of fifteen seconds each, and so on, might be given to suit the necessities of the case.

No doubt the novice will think it is rather ridiculous to go to so much trouble, when one can give one exposure of one second straight off. Granted; but cases often crop up in the

work of the country-side photographer when one cannot often give an exposure of one minute, still less one of five or more minutes.

How often does one set out on a photographic expedition full of zeal, to obtain photographs of country life, vegetation, etc., such as are regularly illustrated in "The Week's Wild Life," and on coming across a suitable object one finds, to his disgust, that a breeze, hardly noticeable hitherto, is gently swaying the subject to and fro, thus making it impossible to obtain a result without the movement showing.

Well, that is one case where this method helps one out of the difficulty. On careful observation one will notice that the breeze most probably is not regular, the wind blowing for a few seconds, and then gently dying away till everything is completely still, this probably lasting for some seconds before the wind rises again. Of course, a March wind or south-west gale is altogether out of the question, although in a strong wind it is often possible, by using this method, to obtain a result more or less satisfactory, where otherwise it would be impossible to obtain any result whatever.

Another case where this method can be used successfully, although it hardly comes within scope of this article, is in interior work. While exposing in a cathedral or other public building one is often hampered by a party of visitors coming within the line of vision of the lens. One merely caps the lens, noting the exposure already given, waits till the party has passed on, then gives the remainder of exposure. Many other cases where this method can with advantage be exercised will doubtless occur to amateurs in their experiences.

In case any readers have not altogether grasped the mode of working from the foregoing, possibly the writer's experiences in ob-

taining a certain photograph will simplify matters.

While out in the woods one dull afternoon last autumn, the writer wished to obtain a photograph of bracken showing the change in the tint of the leaves which takes place in autumn. This plant was selected as the most suitable, the left-hand leaf having completely changed to a yellow tint, while the right was still green, only the ends of the fronds having changed.

Of course, to get the desired result, isochromatic plate and screen were necessary, otherwise with an ordinary plate the distinction between the yellow and green would hardly have been discernible.

However, on testing the light, it was found, using Edwards' snapshot iso plates and a three-times screen that the required exposure would be 45 seconds. In the ordinary way of exposing, this was impossible, owing to the breeze, which in this case had hitherto hardly been perceptible. However, on careful notice being taken it was found that between each

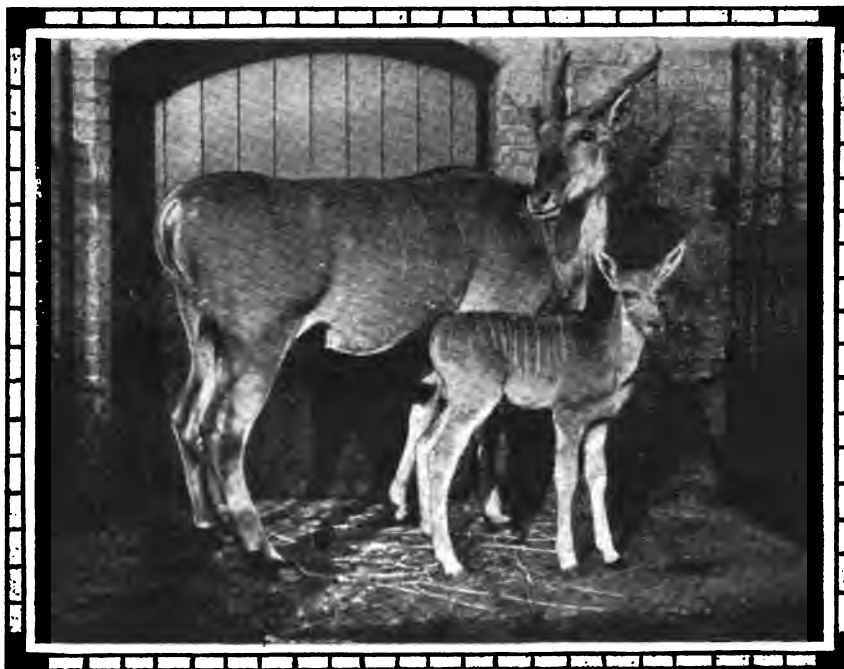


Photo.]

[W. S. Berridge.

Eland with young, four days old.

The little creature was recently born at the Zoo.

gust of wind there was a fairly regular interval of quiet of about 15 seconds.

Having waited till the leaves were completely still, the shutter was opened, and an exposure of 15 seconds given before any movement caused by returning breeze showed. On this happening the shutter was closed until another period of rest occurred, when another 15 seconds was given, this being again repeated, thus obtaining the required exposure of 45 seconds, an exposure which, apart from this method of working, would have been impossible.

The result, it may be said, was quite satisfactory, the leaves being rendered in their correct tone, and not the slightest trace of movement showing. As a reward for the extra trouble taken, if one may look at it in that light, the photograph was accepted by the editor, and reproduced in No. 81 of *THE COUNTRY-SIDE* (volume 4).

In conclusion, there are two or three essentials to secure success in this method of

working, firstly, the main attribute is a good stock of patience, although this is practically a necessity in every branch of photography; another point that needs strongly emphasising is that the tripod must be firmly fixed on the ground, and also that the camera itself be screwed tight on the tripod top, otherwise in closing and opening the shutter one is apt to move the camera, such a happening being, of course, fatal to the result. Also the photographer must possess a watch with a second hand. This, however, is almost a *sine qua non* right through one's photographic career.

Such is the working of this method, which, if adopted by the naturalist photographer, will lead to one often obtaining satisfactory results, where formerly one has returned home with spoilt plates, or, if one is wise, with unexposed plates. It is a good plan to work by this method when it is not necessary, so that one is able to take full advantage of it when the occasion arises.

Latest Notes from the Zoo.

By F. Finn, B.A., F.Z.S.

ONE of the female dingos in the collection has recently produced a litter of nine puppies; only three have survived, and these attract considerable attention. Curiously

enough, these are all white, while the little ones which died were more like their parents in colour, their father being tan—the proper dingo colour—and the mother tan with a black back, like so many domestic dogs.

Such variability may be used as an argument for the view that the dingo is only a feral domestic dog, and not an aboriginally wild animal, but it must always be borne in mind that some species are naturally prone to variation, even though never domesticated—the blackbird among our birds, for example. The dingo is indubitably a dog in every way; it is even said that, although in his unregenerate state so deadly an enemy to sheep, a converted dingo makes an excellent sheep dog.

The quaint little Mandarin ducks in the pond by the tunnel come in for a good

deal of attention. There are three males and three females, and, after carefully watching them, I have come to the conclusion that there is one happily-married couple, that the two other ducks are in love with one drake—who seems to be the strongest bird—and that the third drake is out in the cold. It is curious that the odd duck, who is hanging round one mated drake, seems to resent the approach of the third drake more than anyone.

A specimen of the rare black Banksian cockatoo has been added to the parrot-house, which now contains two black species, the funereal cockatoo having been previously on view. These black cockatoos show colour in the tail, yellow in the funereal, and red in the Banksian species. They are rare in captivity, and, when wild, have different habits from the white ones, being much more arboreal, and feeding much on larvae gnawed from trees.

The illustration shows the eland and its young referred to in my last notes.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to R. E. Warrior, 6, Lytcott Grove, East Dulwich, S.E.

Why does the fat which rises on water in which mutton has been boiled separate or divide into portions, which, when cold, resemble small, thick, round peppermints? Why does it not always form a smooth, firm, compact surface?

All liquids, when perfectly free to move, tend to assume the form of a sphere, which presents the least surface area of any given volume of the liquid. When the mutton-fat is hot, the surface particles of the drop of fat are more strongly attracted by the particles in the interior of the drop than by the surrounding water. The attraction of the outside particles of one drop for the outside particles of the adjacent drop (separated by a film of water) is less than the attraction of the particles of the interior of each drop for their outside films.

When was mahogany first employed by Europeans?

The first notice of mahogany is in connection with the repairing of Sir Walter Raleigh's ships in Trinidad in 1597. The wood does not appear to have been brought to Britain till the end of the 17th century, when a Captain Gibbons carried it as ballast from the West Indies. His brother wished the wood to be used in a house he was having built, but the workmen refused to use it on account of its extreme hardness. A portion of it was given to Wollaston, a cabinet maker, to make a candlebox for Dr. Gibbons. When finished, the beauty of the box created great interest in society. Bureaus made by Wollaston established the reputation of mahogany for cabinet-making.

What are solar haloes, and how many kinds are seen?

Solar haloes are luminous circles seen round the sun, and are caused by the refraction of light by clouds or mist. They vary in size, the larger haloes indicating that the clouds are near the earth, and therefore that rain may be expected, the smaller ones being caused by clouds or moisture at high altitudes. Sometimes the haloes are white, and at other times prismatic colours are seen.

Has silk ever been as valuable as gold in England?

Yes, in the thirteenth century, silk was of the same value as gold—weight for weight—and so little was known of its nature and manufacture that it was thought to grow upon trees. But after the silk industry was established in this country, it made rapid strides, and in 1666 there were forty thousand persons engaged in the trade. In 1685 a great impetus was given to silk manufacture in

this country by the revocation of the Edict of Nantes, when thousands of Huguenots came to England and settled in Spitalfields as silk weavers. The industry soon rivalled that of France itself.

Why will not a Jew's harp produce loud sounds unless the instrument is applied to the mouth?

Sound is carried to the ear by vibrations of the air. When the instrument vibrating is placed upon a hollow body, that body and the air within form a sounding-box, and, by vibrating in unison with the instrument, intensify the sound. If the Jew's harp is placed against the mouth, the mouth acts as a sounding-box, and the sound is much more distinct. The player's outward breathing strengthens the note slightly, and his inward breathing diminishes it. The principle of the violin is the same, and the value of that instrument depends upon the scientific shaping of the wooden frame.

Why is it that, although at first touch sheets feel colder than blankets, after they have acquired warmth from the body they feel warmer than the blankets?

The material of which sheets are made is a good conductor of heat; that is, it will readily take heat from a body which is touching it, or part with some of its heat to that body. Hence, on getting between the sheets a person feels cold because the heat is rapidly conducted away from the skin. On the other hand, once the sheets are warm, they will readily part with their heat to the body. A blanket, however, is extremely slow to take up heat, or to pass it away again. Thus it does not cause these sensations.

Is it true that cats will not eat robins?

It is a fact that most cats refuse to eat robins, leaving the birds lying where they have been killed. But Persian cats—or some of them, at any rate—not only catch but eat the robins.

Why do shot manufactories have high towers?

Why is it that a cracked bell makes such a discordant sound when rung?

When a boy runs with a kite it rises higher. Why is this?

Why are ostrich feathers short and downy?

What causes coughing and sneezing?

Explain snoring and hiccupping.

Week's Wild Life in Pictures.

(See opposite page.)

COMING at a time when other flowers are scarce, the fine effects produced by several of the common trees in flower are doubly grateful. The catkins of the poplar appear before the leaves are fully developed in early spring, and as they are large in size, dark red in colour, and very numerous produced, the male catkins of the black poplar (see the first picture), and other species, are most striking. When torn off by the wind, and lying upon the ground, they might, indeed, well be mistaken for great red caterpillars. The seeds—which are borne only by female trees—ripen in May, and are enveloped in a beautiful white cottony down, from which cloth and paper have been manufactured.

2.—Spring will soon give our wild rabbits the chance to increase and multiply, of which they are notoriously so ready to take advantage.

Prolific as it is, the rabbit exists here under conditions which are not quite ideal from its point of view, as damp is an enemy to it. It was, no doubt, imported here, its native home being Spain and the adjacent Mediterranean regions, where, in Roman times, it was noted as an animal remarkable for its burrowing habits, and formidable from its great powers of increase.

3.—The wheatear (*Saxicola œnanthe*) is a common companion of the rabbit on open warrens, and may nest in old burrows. The bird in the picture is a male, as shown by the distinct black patch on the face; in this sex, also, the wings are jet black when the bird is in full colour. For now the male wheatear assumes his wedding plumage by losing the brown edges to his feathers, which not only gives him a black wing, but a back of delicate grey; his mate's back remains of a fawn colour, but both show the characteristic white at the base of the tail, so conspicuous in flight.

4.—Our illustration depicts the silky male catkins of the common willow, or goat-willow, at a later stage of development than when they are so largely employed for decoration on Palm Sunday. This is the earliest and the handsomest-flowered of the willows. It will be noticed that the anthers are heavily laden with pollen. The male catkins rarely exceed one inch in length, but the female ones lengthen to about three inches in April and May. Whilst the flowers are almost invariably situated upon distinct plants, instances to the contrary have been known to occur.

5.—At the end of March, if warm, or early April, you may find a female Kentish glory hanging at rest on a young birch twig, looking like a bunch of last year's withered leaves, a large moth some 2½ inches across the wings, yet so well do the greys and browns of its variously coloured wings harmonise with their surroundings, that even knowing their haunts you may search for a day on the young birch and not find one female. Their bodies are so heavy that they are almost incapable of flight, and only flutter clumsily over the ground from one young birch to the next, to deposit their eggs, one of which may be seen in the picture adhering to the birch twig. Unfortunately, this beautiful insect has become very rare, only occurring in one small district in England, and in Perthshire in Scotland, though it used to be common in England years ago; no cause for its disappearance is known, though honey-dew on leaves, if given to the larvæ in captivity, is always fatal, and it is thought that this might have some bearing on the question of its decrease. The large caterpillar is a fine pale green colour, and has a short horn on its twelfth segment, not unlike the larva of one of the sphingidae.

6.—So valuable are they as trailing plants upon banks, rockwork, and the like, that in a cultivated state the blue or white-flowered greater and lesser periwinkles must be familiar to everybody. As truly wild plants, however, their occurrence is rare. The lesser periwinkle is a native, being found wild from Staffordshire southwards; but although the greater periwinkle is also found wild in these islands, it is really a native of mild and southern Europe and North Africa.

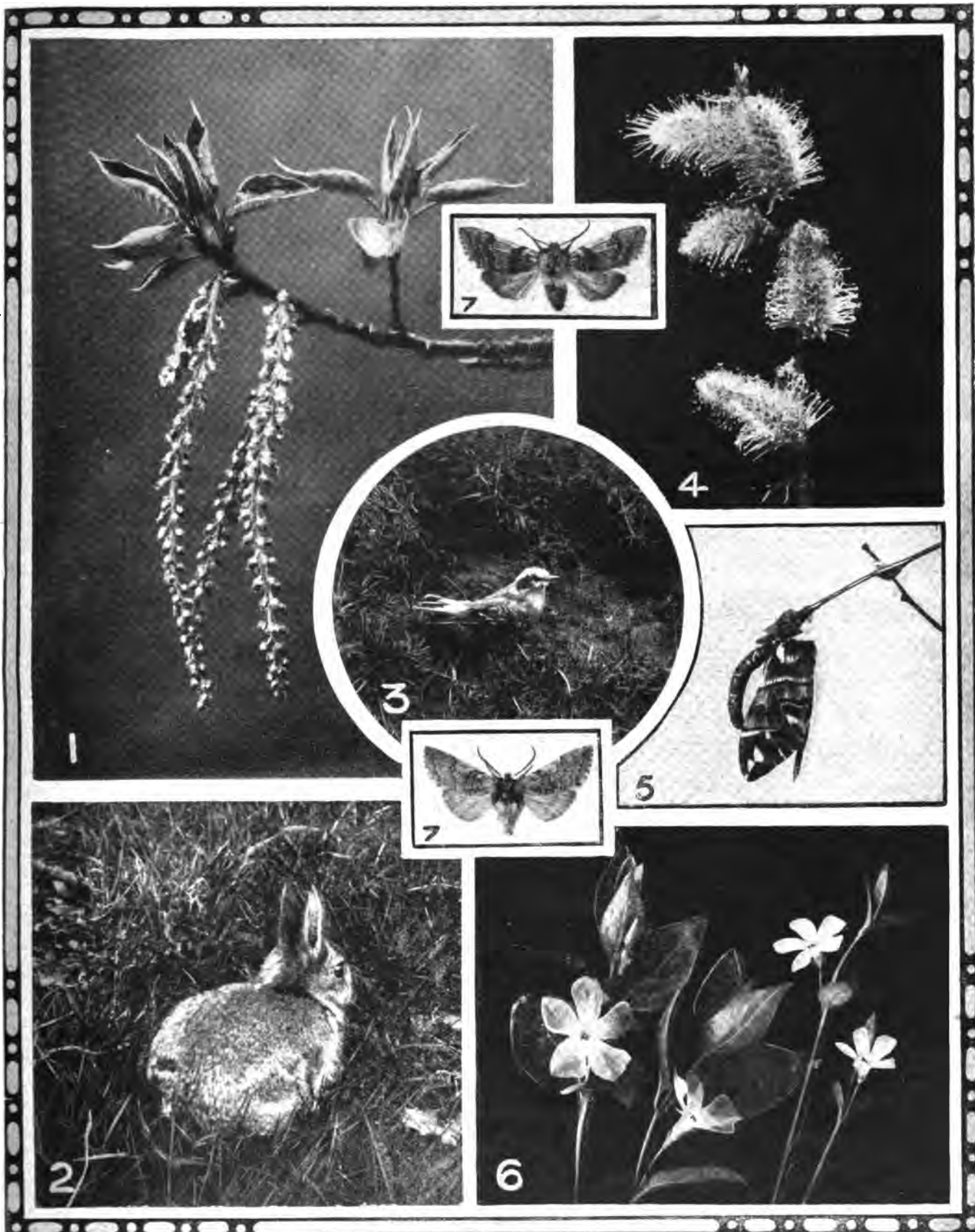
7.—The yellow-horned moth is to be seen on the wing in early spring—March and April—in our birch woods, and is found during the day at rest on the trunks or twigs of trees. But it requires to be searched for very carefully, owing to its protective colouring. It is grey-brown, with transverse dark lines on the fore wings more or less indistinct. Those found in the North of England are darker than those of the South, as will be seen by comparing the two photographs.

EVERY READER WHO WANTS TO BUY OR SELL ANYTHING SHOULD TRY OUR SALE & EXCHANGE.

(See Back Cover.)

THE WEEK'S WILD LIFE IN PICTURES.

(See page 290.)



1. Male Catkins of the Black Poplar, *Populus nigra* (C. Percival-Wiseman). 2. Wild rabbit, *Lepus cuniculus* (R. Boakes). 3. Wheatear, *Saxicola ænanthe* (Allanson and Kiley). 4. Male Catkins of the Common Sallow, *Salix caprea*, showing anthers heavily-laden with pollen (G. Parkin). 5. Female Kentish Glory, *Endromis versicolor*, on birch twig (H. by Haselden). 6. Greater Periwinkle, *Vinca major*, and Lesser Periwinkle, *V. minor* (G. B. Norreys). 7. Yellow-horned Moth, *Asphalia flavicornis*. The upper and darker specimen is typical of the North of England, and the lower and lighter of the South (A. E. Tonge).

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Live-Stock for Profit and Pleasure.

POULTRY.

By "CHANTICLEER."

Poultry Societies.

DURING recent years poultry-keeping on up-to-date methods has engaged the attention of lovers of aviculture, and much good has been done by the efforts of various poultry societies, who have, by combined efforts, advanced the industry in many ways. For the benefit of interested readers I will describe the objects of the three principal societies, utility and fancy.

The National Poultry Organisation Society.

Under the presidency of the Marchioness of Salisbury (who takes a keen interest in all that appertains to utility poultry culture), the National Poultry Organisation has done a good work in improving the quality and the increase of the quantity of eggs, poultry, etc., produced in Great Britain, the maintenance of regularity and uniformity of supply, the provision of facilities for rapid transit, the bringing of the producers and retailers into closer touch in order that the best available market may be obtained at a minimum cost, whilst one of the chief objects is the organisation and development of the poultry industry as a most important branch of British Agriculture.

Various depots, affiliated with the National Poultry Organisation, have been established in the different counties with excellent results, which proves how important the extension of combination in marketing is to our rural communities.

Such egg and poultry societies, conducted on co-operative lines, spread all over the country, have given an enormous impetus to poultry and egg production, securing (especially in rural districts), more adequate returns to poultry keepers.

In the summaries of results obtained—which is published from the N.P.O.S. London office, 12, Hanover Square, W.—the price obtained by producers has increased considerably, and a good profit distributed amongst the members.

Leaflets and other information can be obtained, while all subscribers of one shilling and upwards are entitled to the Society's privileges, and subscribers of one guinea are registered as members of the council.

Mr. Edward Brown, F.L.S., is the Society's experienced secretary, and will be pleased to give advice on the establishment of branches for collection and distribution of eggs and poultry. I should add that Mr. Brown has travelled extensively on the Continent, America, and Canada, and can testify as to the methods of poultry culture in those countries.

A poultry conference (three days) will be held this year at Reading, on July 9th, 10th, and 11th.

Utility Poultry Club.

The sixteen weeks' laying competition, arranged every year by the Utility Poultry Club, directs public attention to the ex-

cellent work being done, and I strongly urge all interested in poultry to become members, especially as the annual subscription is but 2s. 6d., and, in addition to other advantages, entitles members to the Year Book (165 pages), which contains monthly notes to poultry keepers, an egg register for recording the number of eggs laid daily by each pen.

The objects of this club are to encourage the breeding of pure or cross-bred birds, with due regard to utility by breeding only from selected layers, to give prizes for the most efficient and economical system of packing and marketing poultry produce, to give prizes at shows for poultry and eggs, to establish laying competitions between pens of birds under proper management, to obtain the best advice for members on all matters relating to the selection, breeding, and keeping of poultry, to facilitate change of blood from good-laying strains between members; a register of birds and eggs for exchange enables members to obtain new blood in their yards without cash expenditure, and various literature is distributed amongst members from time to time. The hon. sec. is Mr. E. W. Richardson, Stock's Farm, Rayne, Braintree, Essex.

The Poultry Club.

As an ardent poultry fancier and judge I would draw special attention to the Poultry Club, which, since 1877, has been doing a good work in the promotion of the breeding and exhibition of pure-bred poultry; in fact, aviculture, generally, owes a deep debt of gratitude to the club, which now has a membership of about 12,000.

Lord Deerhurst is the president, and all the officers are experienced poultry fanciers, who, at their monthly meetings, discuss the advancement and protection of the interests of poultry breeders and exhibitors, and when one considers the thousands of shows held each year, it will be seen that such a club is needed.

The suppression of fraud and dishonourable conduct engages their attention, whilst valuable cups and medals are offered, and exhibitions held under the Poultry Club rules. The subscription is but 5s. per annum. Mr. G. Tyrwhitt-Drake, Cabtree, Sandling, Maidstone, is hon. secretary.

Specialist Clubs.

Almost every breed and variety of poultry can boast of a society or club to promote and protect its interest, and, in my opinion, the success and popularity of a breed is generally due to the strength of its society.

Specialist clubs not only advance the breeds of poultry, but confer together as to the standard of excellence for fanciers to breed to, as, in order to attain perfection, it is necessary to have an ideal.

The consideration of type, size, colour, and markings is a matter of great importance, especially when the show arena is

the desideratum. Members' shows are annually arranged, when the club's valuable challenge cups are competed for, the judging being deputed to Specialist Club judges, duly elected by the members.

As I have previously pointed out in these columns, to succeed with poultry it is necessary to take up one breed and to learn all about it. To attain these ends it is advisable to join a club or society, whilst if egg production alone is required, the Utility Club or National Poultry Organisation Society will be found the most suitable.

A Ladies' Poultry Club.

A Ladies' Poultry Club has recently been inaugurated, which bids fair to be a decided success. The subscription is 5s. per annum, and the secretariat is in the capable hands of Mrs. Frank Bateman, The Lodge, Shinfield, Reading, who is known as an experienced poultry keeper.

Already fifty members have joined, and two handsome challenge cups are to be offered at the first show. I should add that Rule 7 reads:—"Only those ladies are eligible who are *bona fide* lady fanciers, who are absolute owners of poultry which are kept under their own supervision and at their own expense, and they must not reside at the same address as a male fancier who owns or exhibits the same breed or breeds."

DOGS.

MAJOR BIRKBECK, of Settle, has a large kennel of Irish water spaniels, and amongst the surplus stock he is wanting to sell is the well-known champion, Patsy Boyle.

The West Highland Terrier Club has held a very successful annual meeting under the presidency of Colonel Malcolm, C.B., of Poltalloch, and when, as hon. president, the Duke of Argyll was re-elected. There is now a large membership, which shows that the white terrier is gaining in favour.

The Baroness Campbell has been elected to the position of President of the Italian Greyhound Club, in place of the Marchioness of Waterford, who has resigned. She held the position for several years to promote the fortunes of this graceful little breed, which also reigns supreme in Siam, being the favourite dog of the King and Queen. It is a very dainty little midget, and one of its fascinations is its graceful prancing gait and its swan neck. The fawns are most in demand.

The popularity of the Pekinese spaniel has grown to such dimensions that a specialist show of the variety is in contemplation, when no doubt the wealth of colour (red) will join forces with wealth of ownership to make a grand display. There is no doubt that for some time past the possession of a good Pekinese has meant a very tangible asset of some consequence to poor dog owners, and of great pride to those who took up the variety for a certain distinction of dog ownership.

I learn that in New York the bobtail sheep-dog is little seen, and that collies meet one everywhere. Why does not some enterprising person live up the American trade in dogs by exporting good specimens of the bobtail?

CATS.

THE chief difficulty that an ordinary cat fancier has to contend with is to discover what is really the matter with their pets when they are taken ill. There is an old and true dogma that Nature is capable of curing all curable disorders.

There is a limit to the assistance of medicine, and a very easily-reached point where it is harmful. There is practically no limit to the assistance and benefit of good care and nursing.

Until a few years ago our veterinaries considered cats and their ailments quite beneath their notice; consequently, if they were called in to prescribe for a cat they would treat it in the same way as a dog, and in many cases disastrous results have followed.

Happily, since the cult of the cat has increased in our midst, many qualified and unqualified men have made a special study of cats, and have learnt by experience how very carefully such delicate and sensitive animals as Persian cats should be treated in sickness.

But, after all, no one is really so well fitted to doctor an ailing cat as the cat's owner, provided she is gifted with ordinary intelligence and powers of observation. Success lies chiefly in knowing when and how to use a few drugs. Never be in a hurry to give a cat medicine. In so many cases a change of diet, or an extra amount of fresh air and exercise will quickly bring about the desired improvement.

If, however, the novice, after studying some of the carefully-written cat books, comes to the conclusion that the animal really needs treatment, then it is very advisable to have assistance.

Cats are difficult creatures to dose, and the correct method of administering medicine to them is a most important consideration. It is best for one person to hold the cat, and for another to give the medicine. With the finger and thumb of the left hand the mouth should be opened, and, with the right, the medicine, either in capsule or liquid, put down the throat.

A cat can only conveniently swallow a very small quantity of liquid at a time, so care must be taken that too much is not poured

into the mouth at once. In many cases of extreme illness, or on account of an accident, it is the kindest thing to put an end to our cats or kittens.

A knowledge of how painlessly to carry this out is very important. The most humane method is to place the animal in an air-tight box, into which has been placed previously a piece of lint, cotton-wool, or sponge soaked in about four drachms of chloroform.

This produces at first anaesthesia, or painless sleep, and afterwards death from failure of the respiration and heart. It does not cause a suffocating feeling or spasms as poisons do. Care must be taken not to remove the cat out of the box too soon, or else life, not quite extinct, may return.

CAGE BIRDS.

Mating Canaries.

TOWARDS the end of March one may safely commence making arrangements for mating birds together.

In choosing the birds, for mating, let good, sound health and activity on both sides be the one "cardinal virtue." Never, under any circumstances, try to breed with unhealthy stock. It is just so much waste of time; and even if an occasional success is scored, the young reared from unhealthy parents are much more likely to prove a source of trouble and anxiety to their owner than one of pleasure.

When in a proper condition for mating, the bird should be life and activity personified. The cocks, in their best vigorous song, responding immediately to the voice of the hens with lusty notes, and the hens "calling" frequently to them as they hop restlessly about the cage; and as they get more forward in condition they will be noticed occasionally pulling at the feathers on the breast, and jumping about whilst holding a bunch of the tips of their own feathers in the beak. When they arrive at the latter stage, no time should be lost in mating them, as they will usually go to nest without delay.

Although it is far better to allow the birds to come into condition naturally—and they

will, as a rule, do so at the proper season—there are many birds which, doubtless, owing more or less to mismanagement during the winter and spring months, require some special treatment for a short time prior to mating.

If they appear at all backward at this season, they should be fed liberally, adding a little scalded rape seed to their diet twice a week, and on other days giving a teaspoonful of egg-food about as often. This food may be made either by well mixing half a pound of preserved egg yolk, as sold by most bird-food dealers, with a pound of powdered plain biscuits, when the mixture may be kept in airtight cans ready for use by just moistening the required quantity with a few drops of water; or by boiling a new-laid egg ten minutes, and, when cold, removing the yolk, chopping it finely, and adding twice its bulk of stale bread crumbs, or powdered biscuit.

Beside this, give the cocks a leaf of dandelion daily for green food, and the hens a pinch of inga seed every second day. This should have the effect of rapidly bringing the birds into the proper condition. But, one must be careful not to bring the hens forward before the cocks. As a rule, the cocks will require a week or two feeding up more than the hens.

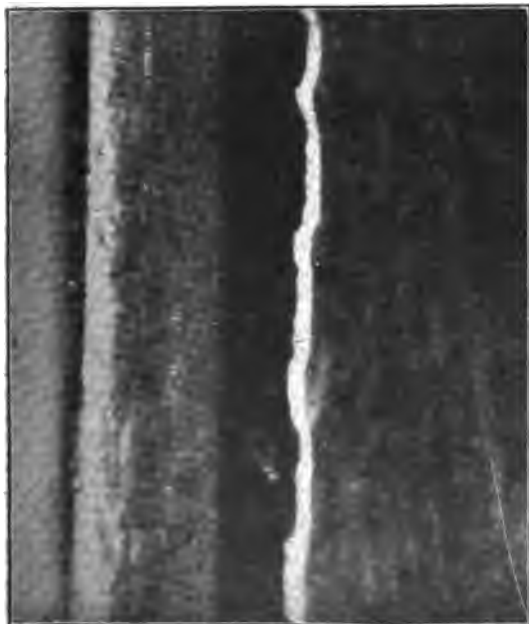
The question of distinguishing the sexes is a puzzling one for a novice. Domestication has practically obliterated sexual differences, so that even experienced breeders are apt to be deceived about a given bird sometimes.

But the most palpable features which the inexperienced may judge by are the louder, more vigorous, and continuous song of the cock; which is always accompanied by a very marked throbbing pulsation of the throat, a richer colour on the throat, and a more alert and bold appearance generally. Some hens will make a fair attempt at singing, but their vocal efforts are fitful and disconnected, the voice weaker, and the whole appearance and gait more tame and "hennified." They lack the "go" and bustle of their mates.

"DAILY MAIL."
The Naturalist's Daily Newspaper.

What Is It?

Prize of £1 awarded.



Part of the back of a Penknife Magnified.

The What Is It of March 9th represented a small part of the back of a penknife. The two irregular white lines were the brass plates, the steel was in between, and on either side of the brass is seen one of the bone sides. No reader thus definitely described the What Is It, but several came very near. One thought it was the front of a penknife, and another the side. Two other solutions read respectively: "Handle of a pocket-knife" and "Represents a small pocket or penknife." All of these were, of course, incorrect. The What Is It was not the front or side of a penknife, nor was it the handle of a pocket-knife, nor "a penknife." It was a small portion of the back of a penknife, or, to be less definite but perfectly correct, "a small portion of an ordinary pocket-knife." This was the answer sent by Mr. Joseph Kinnear, Tuscan Villa, Wokington, and to him therefore the prize of £1 is awarded. Many other solutions were suggested. The What Is It was thought to be a part of meat, sponge, paper, a razor-edge or handle, a knife-blade, a fork, a lady's purse, a rasher of bacon, a hair-brush, a lead-pencil, a comb, a match, cotton, cork, scissors, a blanket, a towel, and cinnamon bark. But by far the majority believed it to be a portion of some cutting instrument—knife, scissors, or razor. We would suggest to competitors that in writing down their solution they express exactly what they mean in clear language. This is absolutely necessary.



The Penknife, a part of the back of which was Photographed.



The Garden.

Work for the Week.

The Flower Garden.

THE lawn-mower will now be coming into general use. Before the first run over, oiling and adjusting must be attended to, and lawns should be well swept and heavily rolled. Trees and shrubs lately planted will be likely to require copious waterings.

Continue to propagate those bedding-out plants of which there is not a sufficient stock, and give to flower garden plants now under glass the fullest possible ventilation during mild weather. Prepare beds and borders for the coming seed sowings.

Rose Pruning.

With the advent of April this may be taken in hand, and now that the right time has come the sooner it is entirely performed the better. The treatment of the rambling sorts has already been dealt with, and in the case of those that remain so many amateurs appear to be entirely ignorant of the main principles of rose pruning that it will be well to endeavour very briefly to set these forth.

The hybrid perpetuals, hybrid teas, and some teas require rather hard pruning; what is not generally understood is that cutting out the weaker growths and shortening the others back to a few inches in length results in the throwing out of more vigorous shoots. Therefore, particularly should large blooms be required, however weak the plant it should be pruned.

After the late severe frosts it is probable that careful examination will disclose the presence of a good deal of injured wood. Do not hesitate to cut this entirely out, even should what remain be but a sparse remnant. A sharp pruning-knife should be used. Secateurs, which are easier, should only be used when the cut they make is an absolutely clean one. Always endeavour when pruning roses to picture what will be the resultant growth. As tea-roses are the tenderest it is advisable to leave them until the last.

Solanum Capsicastrum.

As the winter cherry remains for so long in good condition it is deservedly one of the most popular of pot plants. Plants from which the berries are commencing to fall should now be pruned back and kept in a warm place, repotting in a smaller pot to follow as soon as new growth begins to appear. The stock may readily be increased by means either of cuttings inserted now in sandy soil, or by seeds.

Artificial Fertilisation.

Indoor peaches and strawberries will, in particular, well repay a little attention in this respect. The old plan of lightly dust-

ing a rabbit's tail over the flowers is a good one. Another method is to fan the plants vigorously upon sunny days.

Aphides.

The familiar green fly can be thoroughly depended upon to have put in an appearance in the greenhouse, whilst its blue and black relations will probably follow on later in the orchard. Somebody praised the aphides as being "excellent mothers," and we can well believe it. Fortunately they

some very powerful insecticide to thoroughly dislodge them.

Woodlice are best disposed of by means of traps in the shape of inverted pots filled with hay, pieces of potato, etc., whilst a visit after dark, with a lantern, is the best method of getting rid of slugs that have made their home under glass.

Thinning of Seedlings.

This is a highly important topical instruction. Thin sowing in the case of all seeds is advisable, but even where, as is so often not the case, this has been done it is probable that an early and complete thinning of the seedlings will, alike in the case of pots, pans, and boxes under glass, and drills out of doors, be most essential. A thoughtful glance at a seed bed will convince far better than can words how positively ruinous is overcrowding in a young state to the prospects of good after-results.

Furthermore, the carrying out of this principle throughout perhaps the great majority of gardens would effect a most happy transformation. Undoubtedly a great deal is lost by overcrowding. Nothing is more common than to see, say, two tomato plants, or half a dozen of some hardy annual growing where there should be but one.

We suggest to the average gardener that it will be both interesting and instructive should he put the matter to the test by comparing the results obtained from, say, an extra-thinly-sown row of main crop peas as against a row sown as is his ordinary practice.

G. T.



Photo]

Yucca Gloriosa.

[S. L. Bastin

It is indifferent to town smoke and dust.

are one of the easiest of all pests to destroy, and this is a task that must not be neglected. Under glass, if they be at all numerous, fumigation is the least troublesome method, and if properly performed with one of the modern vaporising extracts in a tolerably air-tight house it will be thoroughly efficacious. Select a still evening for the operation. Give air early the next morning, and at the same time give the whole of the plants in the house a good syringing. Should only a few plants be affected, dipping in a solution of soft soap and quassia may be resorted to.

Other Pests.

Several of these, and in particular thrips and red spider, are unfortunately by no means so easy of extermination. Moisture is the great enemy to both of these; but, once present in numbers, thrips will require the very thorough application of

Yucca Gloriosa.

A Useful Plant for London Gardeners.

THE Yuccas, or Adam's Needles, are all natives of the Southern United States, Mexico, and Central America. There are about twenty species of them, and the best known is represented here by a typical example in flower.

It is an excellent garden plant, and is so indifferent to town smoke and dust that one may see perfect specimens of it in the villa gardens of London. It is not by any means common, small examples costing 10s., but, once obtained, it is not easily lost. In a sunny position it flowers annually, and there is no more beautiful hardy plant than this is when at its best.

A glorified hyacinth is not an inapt description of it, but the leaves are stiff and sharp-pointed, and the flowers are creamy-white bells. The flower spike is terminal, and therefore the shoot which bears it grows no more afterwards, but lateral shoots are developed lower down the stem. There is very little to choose between *Y. gloriosa* and *Y. recurvifolia*. Now is the best time to transplant Yuccas.

The Garden.

Two Good *Cypripediums*. EASILY GROWN ORCHIDS.

THE popularity of *Cypripediums* is due as much to their good behaviour under cultivation as to their floral attractions. They are easier to keep in health than any other exotic Orchids, and they flower freely at least once a year. Whilst the genus shows a very wide range of variation, it possesses well-marked peculiarities in flower structure, the whole of the species, without exception, having a pouch-like labellum or slipper. They also differ from all other Orchids in having two anthers, one on each side of the shield-topped stamen.

Darwin, in his "Fertilisation of Orchids," says of *Cypripediums*, "An enormous amount of extinction must have swept away a multitude of intermediate forms, and left this single genus as a record of a former and more simple state of the great Orchid order."

The genus is widely distributed — east and west, north and south — more widely by far than any other genus in the order. There are, however, none in Africa nor in Australia.

They are among the easiest of Orchids to breed and hybridise, consequently thousands of seedlings have been raised in gardens. The two species here represented have proved most valuable breeder plants, *C. Laurencianum* being a parent of about 120 named hybrids, whilst *C. Fairrieanum*, although father of only some 20 hybrids, stands first for quality. The re-introduction of the latter species in quantity a year or so ago caused great excitement among breeders, and now, wherever one goes almost there are to be seen plants of it bearing fat seed-pods, with the tell-tale breeder label attached.

The range of variation in the flowers and leaves of *Cypripediums* has its concomitant in the variety of conditions that the species thrive under. The hardy species, including our own native *C. calceolus*, may be grown in a fern rockery or bog garden; then there are some which are happy in a greenhouse from which frost alone is excluded; others which do well in an intermediate temperature, and

so on to the most tropical. *C. Laurencianum* is decidedly tropical, as it is a native of North Borneo.

It is abundant in cultivation, and therefore cheap in price. The leaves are beautifully tessellated, and the flowers are vinous purple, green, brown, and white. *C. Fairrieanum* has green leaves, and white, purple, and green flowers. It is a native of the Bhotan hills, and is quite happy in an ordinary greenhouse.

Flower Novelties.

It is astonishing how year after year the seedsmen contrive to offer quite a crop of novelties, and whilst many of these

of compact habit, producing long spikes of ivory-white flowers.

We commend these for trial by those who take pleasure in having the most up-to-date flowers in their gardens. There are also, of course, new kinds of Roses, Sweet Peas, and other garden favourites innumerable. The difficulties of distinguishing the gems from the paste by catalogue descriptions alone are, however, so considerable that professional gardeners generally find it most profitable only to grow plants that they have themselves actually seen at the shows.

Sword Lilies.

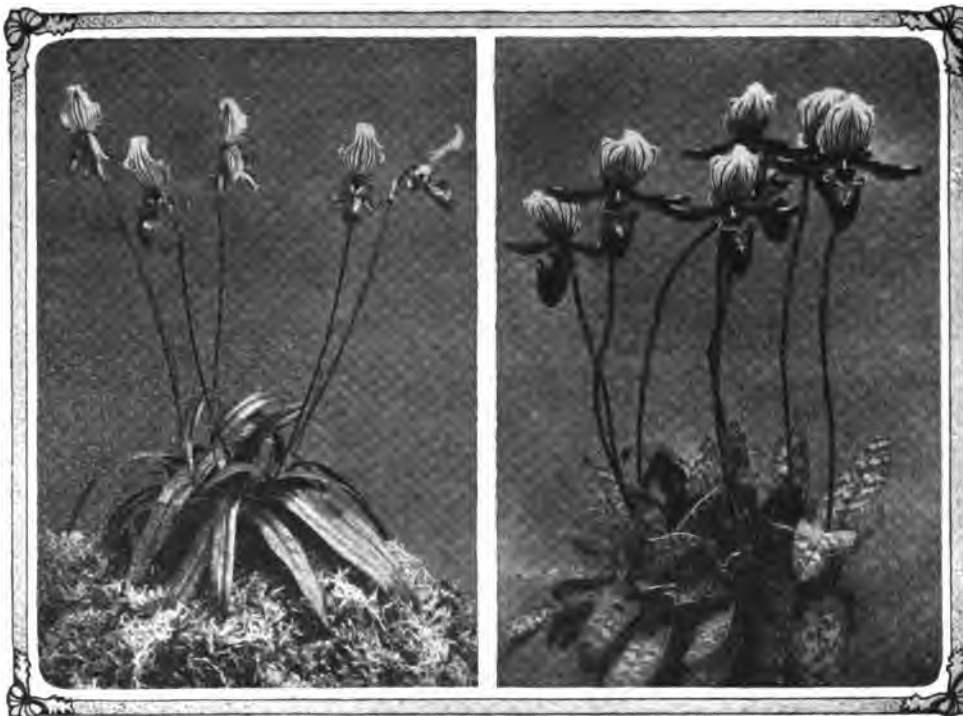
Now is the time to plant Gladioluses. The corms are offered by the hundred and thousand by dealers and auctioneers, at prices, too, which bring them within easy range of the gardener who cannot afford to spend much money on plants. The best sorts, such as *Lemoinei*, *Childsii*, and *Nancyanus*, can be purchased at about 2d. each. The brilliant scarlet *Gandavensis* or *Brencheleyensis* is much cheaper than this—say, 5s. per 100.

They should be in every garden where flowers are wanted; but there are hundreds of gardens where they are never seen. This is only because they do not happen to come along or catch the eye, or it may be for want of a little forethought on the part of the

gardener, amateur as well as professional, who relies upon the ready-made bedding plant for his summer display.

Gladioluses are happy in any ordinary garden soil, and they flower in late summer and autumn. Their colours are of all shades, even blue being represented, but the carmines and scarlets are by far the most effective. The corms are as portable and safe as *Crocus* corms; indeed, they require the same kind of handling, except that, being two or three feet high, they must be set further back in the border, and, of course, they require to be planted about four inches deep. Wind interferes with the flower spikes unless they are supported early with stakes, or, better still, planted in a position sheltered from wind.

A bed in a conspicuous place may be made a glorious picture in July or August by filling it now with a mixture of *Gladiolus* corms, about six inches apart, and planting over them mixed Pansies, or sowing seeds of some annual, such as *Phlox Drummondii* or *Gypsophylla*.



Photo]

Cypripedium Fairrieanum.

Two Good Ladies' Slippers.

Cypripedium Laurencianum.

[Copyright.

eventually prove to be failures, inasmuch as they are scarcely heard of again, the year nearly always does produce one or more new flowers of real merit.

The most promising of what are offered this season appear to be the following:—Hybrids of *Impatiens Holstii*, for pot culture and for the open border, comprising a variety of colours. The parent, a red-flowered Balsam, only lately introduced from East Africa, is a plant of decided merit. *Cheiranthus Kewensis*, a fine winter-blooming Wallflower, with flowers ranging in colour from a delicate sulphur shade to purple-violet. It will flower five or six months after sowing, and continues in bloom for a very long period. *Glaucium leiocarpum*, a new species of Horn Poppy from Asia Minor, flowers dark orange-scarlet, with black spots at base. *Chrysanthemum inodorum plenissimum*, "Bridal Robe," described as being exceptionally floriferous, and very valuable for bedding purposes. Wallflower, Sutton's Ivory White, a large-flowered variety

PROFESSOR KEITH-HARVEY ON MODERN MIRACLES.

Deafness Entirely Cured in Most Unlikely Cases.

The public has recently been greatly interested in a series of wonderful cures effected by an ear specialist whose name we suppose is known to every reader of this paper, and it is his work in one special direction that has given rise to the rumour of miracle-working. Certainly some of the cures of deafness he has been working seem almost like miracles, but their explanations are quite easy to obtain.

Professor Keith-Harvey, this highly successful specialist, has given to the world the real facts concerning the cause of deafness, and it is in his new treatment of deafness and its astonishingly successful results that the world has been surprised.

He, it was who publicly exploded the old-fashioned theory that deafness could only result from the breaking of the ear-drum. He pointed out that in nearly every case deafness resulted from atrophy of the inner muscles of the ear.

Professor Keith-Harvey's great work, however, lay not in establishing a theory, but in practically putting it to a great use—the curing of the thousands of those who suffered from that dread disease, deafness.



Professor Keith-Harvey's treatment is at once simple and permanently effective. It is possible for every sufferer to undertake the treatment in his or her own home with every hope of a cure. There is even no need to pay a first visit to a doctor, for the advice necessary may be given by post.

In a book which has been specially prepared by Professor Keith-Harvey this system of treatment is explained, and so important is this matter to thousands of people that arrangements have been made whereby every person may receive a copy of this book free of charge on application.

We earnestly advise every reader of the COUNTRY-SIDE, who is suffering either from deafness, noises in the head, discharges from the ear, or earache, to write at once for Professor Keith-Harvey's advice. To neglect ear trouble is the greatest folly, for deafness is a disease that grows more serious as days progress, and the longer it is left the more difficult it becomes to effect a cure.

That the "Keith-Harvey System" can cure deafness has been proved by the thousands of letters from cured patients that have been received. In each one breathes the glad joy of renewed existence, or with hearing restored life begins again with all its happiness.

To those who send a letter stating the particular nature of their ailment, Professor Keith-Harvey is always willing to give special advice that will be of immediate use in relieving the suffering of the afflicted. No charge whatever is made for this advice, which is sent together with the book. Letters or postcards should be addressed: Professor G. Keith-Harvey (Room 990), 117, Holborn, London, E.C.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three coupons (like that on page v.) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Trees in Sandy Soil.—All the trees you name—poplar, oak, acacia, beech, and sycamore—will flourish in sandy soil in the neighbourhood of Ascot.—(to F. HALL, Wandsworth.)

Irish Water Spaniels.—No doubt you would be able to obtain a good puppy from Major Birkbeck, Settle.—(to A. UNSWORTH, Liverpool.)

Moorhens in Bushes.—No, it is not at all unusual to find moorhens perched in bushes, especially in the winter. Where cover is scarce they habitually resort to bushes or trees in woods.—(to J. ALLAN JACK.)

Cat's Baldness.—It may be that your cat is casting his coat, as Persians do at this season. If, however, the skin is at all red, he may have a little eczema; in which case, send to Mr. Wilson, Ashford, Middlesex, for some lotion.—(to A. C.)

Gnawed Branch of Sycamore.—The author of the destruction to bark of a sycamore was probably, as you suggest, a squirrel; it might either have been eating the inner bark, or in search of larvæ, as squirrels are insectivorous to some extent.—(to Miss S. C. BENNIS.)

Food for Tortoise.—Feed your tortoise upon lettuce, cabbage, dandelion, and grass; keep water within reach. If kept in a garden, it should hibernate in autumn under the ground, remaining until the spring. If it does not bury itself, it should be placed in a box with some hay, and kept where the frost cannot reach it.—(W. LAMBERT, F. RENDLE, and others.)

Pierced Blackbirds' Eggs.—The case you quote of four pierced blackbird's eggs hatching, mentioned in Mr. Kearnson's book, is certainly opposed to the experience of poultry fanciers. It would be worth while to experiment with several different species of our most abundant birds—those whose numbers would bear reduction, to see how far this holds good.—(to BOLTON C. WALLER.)

Micro Slides.—For preparing insect paste, soak in glycerine 1, distilled water 3 parts, acetic acid 12 drops to the ounce. For mounting: Glycerine 1, water 2, and half quantity acid. In fixing up the cell, use pot size or brown cement for both cell and cover; the edge of cell should first be rubbed "true" on fine glass-paper.—(to M. L. BOND, Nottingham.)

Improving Colour of Bullfinch.—You can do nothing to improve the colour now. It is only just before and during the moulting season that any treatment would be of use. When that time arrives give a liberal supply of natural food—wild seeds, fruits, and berries; give a bath frequently, and once or twice a week add twenty drops of chemical food to its drinking water. This will help it to moult a better colour.—(to K. G. WHITEHEAD, Birmingham.)

Jackdaw Ill.—Improper diet is probably the cause of the bird's condition. Feed on two parts bread-crumbs, one part ant's cocoons, and one part yolk of egg or crissel, made crumbly moist with mashed boiled potatoes. Add any scraps from the table, as many insects as possible, beetles, cockroaches, small worms, etc., or callow nestlings, birds' eggs, or young mice, and any sweet fruit in season. Let it bathe as often as it likes.—(to C. ANDREWS, Bedford Park.)

B.E.N.A.

(British Empire Naturalists' Association.)

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* All applications should be addressed to the local secretary of the district, or to Miss G. B. Norreys, Warham, Wells, Norfolk.

Changes of Addresses, etc.—All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should be notified to the Organising Secretary, Mr. J. W. Mercer, 611, Chorley Old Road, Bolton, Lancs.

Proposed Camp in the New Forest.—Mr. Percy Johnson, B.E.N.A., who is organising a holiday camping party, writes: "We want naturalist recruits for this camp, which will be at Lyndhurst, New Forest, for the third August running. Campers should be between the ages of 17 and 23. We desire a personal interview and the exchange of references. The cost works out at £1 per week, or 30s. for a fortnight per man. The camp will run for a month or so." Replies should be addressed to Mr. Johnson, care of "Country-Side" office.

Photography of Specimens.—LEICESTER DISTRICT: Mr. F. Lumbers, 41, Highfield Street, Leicester, is willing to photograph specimens, etc., for members at a nominal charge; but, if the photograph should be reproduced, the fee for publication will go to him as owner of the copyright. NORFOLK, SUFFOLK, AND NEIGHBOURING DISTRICTS: Mr. A. L. Bonas, Richmond House, Castleacre, Norfolk, will be pleased to photograph any natural curiosities or specimens for members free; but if the specimen is to be returned sufficient stamps must be enclosed for postage.

Secondary Schools Join in the Mutual Aid Scheme.—Especially welcome is the success which has attended the experiment of linking together two secondary schools, namely, the Grammar School, Tottenham, and The College, Rhos-on-Sea, Colwyn Bay. Mr. C. H. Cox, the headmaster of the former, wrote on February 24th: "We have already received two parcels of most interesting material from Colwyn Bay, per Mr. Fowler, of The College. On finishing with the parcel I sent it across the road to a large girls' school." Will any masters or mistresses of other secondary schools who would like to be linked with corresponding schools write to the Hon. Cordelia Leigh, 32, Chester Street, Grosvenor Place, S.W., who is hon. secretary of the scheme?

Local Lists.—Will all local secretaries who have not yet sent their lists of members to the organising secretary, Mr. J. W. Mercer, 611, Chorley Old Road, Bolton, Lancs., do so as early as possible?

Qualification for Membership.—In answer to inquiries from new readers desirous of qualifying for membership, it has been decided to give a generous interpretation to the phrase "regular reader." For the future this will be held to include any person who can give the address of a newsagent who has been ordered to supply or reserve a copy of THE COUNTRY-SIDE for the applicant every week. This is regarded as sufficient, because unless the new member does in reality read the paper regularly he will miss the advantages of continued membership.

New Members can Work.—Mr. I. M. Curtis, B.E.N.A., gave a lecture on British butterflies and moths to the Wesleyan Guild of Holbeach, Lincs., the other day. This seems a good way of extending interest in nature and drawing attention to the B.E.N.A. in districts where our members are as yet too few to form an active branch.

"Flora of Surrey," an old volume published by Van Voorst, 1862, compiled for the Holmsdale Natural History Club, Reigate, will be lent to any Surrey member by Mr. W. H. Apter, care of Mrs. Coupar, 2, Argyle Park Terrace, Edinburgh. (The borrower would, of course, pay postage.)

Signature of Members.—Mr. F. Lumbers, Leicester, suggests that all members who send contributions of notes, photographs, articles, etc., to THE COUNTRY-SIDE should always add "B.E.N.A." after their signatures.

To Let or Hire Apartments,
See our
House or Apartment Register
on the Back Cover.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 99. VOL. 4.

APRIL 6, 1907.

1d. WEEKLY.

A Tiny Sleuth.

By FRANK P. SMITH.

(Illustrated from Photographs by the Author.)

AMONGST the numerous creatures which one habitually finds upon garden walls or wooden palings, probably none is more interesting than the spider known as *Marpessa muscosa*. With one extremely rare exception, it is the largest of our British jumping-spiders, and although by no means gaudily or even strikingly-coloured, it is a beautiful creature, with its delicate tints of pale and dark brown, and its quick but wary movements. *Marpessa* may truly be called a suburban spider.

and no sooner does the district become distinctly urban in its tendencies than *Marpessa* surely vanishes. For a year or so, perhaps, she lingers upon the brick walls which replace her favourite fence, and then, invariably it seems, disappears altogether.

This peculiarity gives us valuable assistance in our search for the little creature; but we need something more, namely, a pair of well-trained eyes for our

quarry is by no means easily detected, as she rests motionless upon the grey paling. To say that she harmonises with the colouring of her surroundings would not be altogether the truth; but so great a resemblance has her brownish-speckled body to a splash of mud that the inexperienced naturalist might well be excused should he miss her.

Generally, however, she will, sooner or later, betray her presence by moving, but, even then, one would experience considerable difficulty in capturing her, for she knows well enough the means of escape at her disposal, and will either dexterously glide into a crevice between two palings or, what is still more demoralising to the attacking party, drop suddenly from the fence to the ground, breaking her fall by means of a line of thread attached to the wood.

Once amongst the herbage and loose soil she simulates death so perfectly that to detect her is well nigh impossible. "Why not pull the thread by means of which she broke her fall?" the intelligent

brilliant retreat, cautiously cuts the thread as she reaches the ground.

At Fig. 2 is shown a front view of a



Front view of *Marpessa muscosa* magnified sixteen diameters.

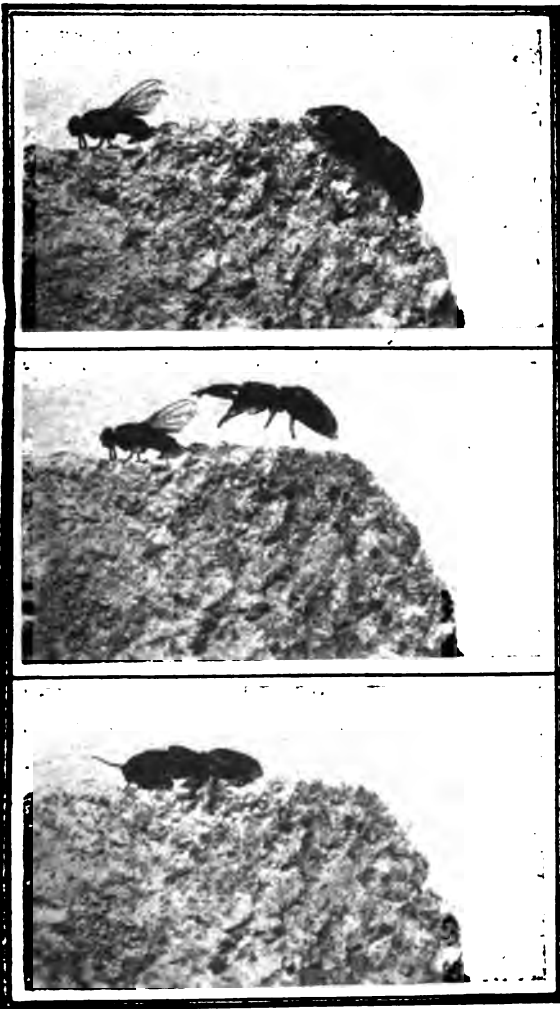
female *Marpessa*, considerably magnified in order to show the enormous frontal eyes which, in living specimens, are of a lovely transparent green tint. The remaining eyes are much smaller, and are placed upon the back part of the head.

The use of these large eyes becomes apparent when we consider the means by which *Marpessa* captures her prey. She is, in fact, a most skilful detective, and shadows her victims, usually flies, with wonderful craftiness and dexterity. She will often occupy five minutes in moving that number of inches, taking advantage of every ridge or projection.

It may be a matter of surprise that this can be accomplished even upon a vertical paling; but the secret lies in the fact that the spider, before leaping, attaches a thread to the surface of the wood, and depends upon the strength and elasticity of this thread to bring her back again to a firm foothold.

The accompanying photographs (Fig. 1) give a very clear idea of this interesting little episode. It is often stated that spiders cannot see any considerable distance, but, accurate as this may be when some species are under consideration, it certainly does not apply to *Marpessa*.

By moving one's hand above the spider one can notice her beautiful green eyes following every movement. I do not mean to say that the eyes themselves are capable of motion, but the whole head of the spider is turned so as to continually watch the source of suspected danger.



These photographs show three stages in the stalking of a fly by the *Marpessa*.

It is seldom found far away from its favourite haunt—the flat wooden palings so commonly found surrounding parks, nurseries, and the like; but it is or a most fastidious disposition.

reader may reasonably enquire. The uselessness of so doing at once becomes apparent upon making the experiment, for the cunning spider, instinctively appreciating this weak point in her otherwise

Country-Side Notes.

"To me the meanest flower that blows
can give
Thoughts that do often lie too deep for
tears."

WORDSWORTH.

(Sent by J. C. Nosworthy, Bristol.)

WHEN the April sun shines, even on the windiest stretches of our coast, you have only to search out a sheltered glen, on a sunny morning, to enjoy 'real spring.' All the earliest butterflies have awakened from their winter sleep—the brimstone, flickering by like a scrap of yellow paper, the peacock, spreading the glory of his damask wings with azure eyes on a sunny corner of the footpath; the tortoise-shell, tawny and yellow with splashes of black; the red admiral, velvety black, barred with scarlet and flecked with white—each as lovely as the others. A rustle by the dry margin of the wood path through the heather has drawn your eyes to the grey, glistening curves of the escaping adder; and, where the herbage is already rank upon sunny hedgerow banks, a quick swirl among the lush grass has given you half a glimpse of the grass-snake's long, spotted, olive body that, like a waving whip-lash, is suddenly jerked from sight. In many districts the harmless grass-snake seems now to be utterly unknown, and I think that its fate is sealed wherever high farming is carried on, with its bare-trimmed hedges full of rat-holes. The rat, I believe, exterminates the snake, eating it not only when it is small and weak, but boldly seizing and killing full-grown snakes over two feet in length."—From "The Country Day by Day," April 3rd.

With the present issue of THE COUNTRY-SIDE, the publishing department has been removed to 2 and 4, Tudor Street, where the Editorial offices have been situated since the commencement of the paper. Will readers please note that all communications should be sent to that address? The COUNTRY-SIDE has now no connection with any other publishing house and we shall be much obliged if any of our readers who find any difficulty in obtaining their copies will communicate with us at once; they will much oblige by giving the name and address of any newsagent who cannot supply demands.

Mr. Robinson asks us to state that owing to the severe illness from which he has been suffering during the last few weeks, his pen has been almost laid aside, but is happily now on the way to recovery, and hopes once more to come into close touch with all his readers.

Will any who have communicated with him during the last three weeks, and received no answer, kindly remember that he has been entirely prohibited by his medical advisers from attending to any correspondence, and that it will be some time before he can hope to catch up the arrears of work.

A correspondent has written for advice as to the feasibility of introducing wild life, such as squirrels and owls, into a

fairly large wood near a large manufacturing town; also for useful hints. There is no reason why success should not reward so laudable an undertaking, provided patience and care are exercised in conjunction with the outlay of a small amount of money. If our correspondent owns the wood, half the battle is already won, for the thriving of such creatures is best secured by the provision of adequate protection. It would probably be some years before much result became evident, though, after the creatures had begun to breed successfully in the wood, their ranks would soon show a gratifying annual increase.

The first thing would be to obtain all the local support possible. The co-operation of a host of COUNTRY-SIDE readers is certain, and there could be no better way of obtaining the wherewithal for a start than through its advertising columns. No time should be lost in arranging for plenty of young squirrels, owls, and hawks from districts where there are enough and to spare; hedgehogs, too, might easily be obtained by the bushel.

The imported birds and beasts should be reared by hand-feeding, and housed in roomy, clean, comfortable, and well-protected quarters, for choice in the centre of the wood. Then, towards the end of the summer, they could be released by degrees, not all turned adrift in a crowd, a supply of food being regularly placed where they were reared. And this food supply should be continued after the creatures are able to forage for themselves, for if food is not forthcoming they will not stay.

The query of a correspondent as to the possibility of hybrids between a robin and a canary, or a ferret and a rabbit, calls to mind a very widely-spread misapprehension. Few errors are commoner among people not well acquainted with animals than the idea that deviations from the normal type may be accounted for by crossing. This has come down from ancient times, for the classical peoples had very liberal ideas as to the extent of hybridism. Thus one gets notions that the Manx cat, with its bob-tail and long hind legs, has a blood relationship with the rabbit, and that ducks born—as they may occasionally be—without webs to their feet are the offspring of a fowl on one side.

In point of fact, however, the ascertained limits of hybridism are very narrow. It may be safely said that no authentic case of a hybrid between two animals of distinct orders, such as the cat or the ferret and the rabbit—a carnivore and a rodent—has ever been recorded. Nor have hybrids been obtained as a rule between species of different families; indeed, it is doubtful if any have been thus produced. Pheasants have, for instance, hybridised with grouse—the blackcock and capercaillie—but the grouse are very near the pheasants, and hardly merit the distinction of a separate family of their own.

Then again, setting aside the fact that hybrids between remote species are never

fertile, whatever may be the case of those between nearer relatives, we have no evidence that hybridism tends to produce variations. The more the origin of our domestic animals is inquired into and searched out the more probable it appears that their variability is simply innate in those particular species, and is not likely to have been induced by a mixture of several. To take the appearance of light colours in domestic birds, for instance: every canary-fancier knows that a "light mule," a canary-coloured hybrid between a canary and a wild finch, such as the goldfinch, is particularly hard to produce, since a hybrid bred from a yellow canary is almost as certain to come dark-coloured as if its canary parent were green. On the other hand, some birds, especially the blackbird, are particularly apt to produce light variations without being domesticated at all.

In view of a recent discussion in a London daily paper regarding the positions of plovers' eggs in the nest, and the facts to be inferred from them, it will be useful for future guidance to review the practical opinions expressed. First, when four (or fewer) eggs are found lying "anyhow"—as countrymen say—in almost every case those eggs are fresh—that is to say, not sat upon. The exceptions are when the sitting bird has possibly disturbed the usual end-inwards position in leaving the nest; but since she steals off so gently, this must very rarely happen. When eggs are found (especially fewer than four) with the small ends inwards, this is not necessarily certain proof that they are "setty," though the chances are that incubation has started. Yet, in instances of eggs so found, and in which there is subsequent proof that they are fresh, it is only reasonable to assume that the small ends were worked inwards by the hen for her greater comfort when sitting in the nest to lay. Next to the water-test, a smooth, polished shell is probably the best exterior test of incubation or staleness, while a comparatively rough, dull shell indicates that eggs are fresh.

Honeysuckle leaves are the first to respond to the summons of spring, and their fresh, soft green is, year by year, an encouraging forerunner of the graceful trails of delicate blooms, which, in their good time, shall come to fill the sunnier woods with ravishing fragrance. Among the delights of a walk through the woods in April, it is interesting to note how relentlessly the vine of the honeysuckle grips the supporting stem, and the way in which it gradually eats into the heart, eventually to kill its unresisting patron—slowly, surely, and serpent-like. And perhaps more than one rural preacher has drawn upon this habit of the honeysuckle to point a simple allegorical story to rustics whose daily toil is near the doom of unchecked habit.

What in the early months of the year should we do without the primula family? There are five native species—the primrose

(*P. vulgaris*), the cowslip (*P. veris* or *officinalis*, supposed to be the parent of the garden polyanthus), the oxlip (*P. elatior*), the bird's-eye primrose (*P. farinosa*), and the Scotch primrose (*P. scotica*), which is possibly only a variety of *P. farinosa*. All are beautiful, but the two last are especially interesting because of the mealy powder on the leaves. This meal is really a waxy secretion, and it is usually confined to the lower side of the leaf—the side in which the stomata or breathing spores are situated. As the plants naturally grow at the base of hedge-rows, in the woods where dead leaves accumulate, and in other damp places, the stomata would be liable to be clogged with moisture, but this is prevented by the mealy powder. The resinous secretion on the opening buds of the chestnut serves a very similar purpose. It keeps out the rain, and so protects the tender leaves from the effects of excessive damp.

* * *

About this time the glistening yellow flowers of the marsh marigold begin to star the deep green of wet meadows. It is remarkable how hard superstition dies. Even now there are many who believe that to the marsh marigold, and also to the buttercup, our butter owes its creamy tint—a tint often artificially deepened to yellow by means of saffron—though, as a matter of fact, both plants are avoided by cows, for, like most of the ranunculus family to which they belong, they are injurious, if not actually poisonous. This acrid principle is, indeed, their defence against browsing animals. They are so conspicuous, especially when they are in flower, that if they were good to eat they would have very little chance of escape. The glossiness of their leaves is caused by the absence of hairs—a feature common to most plants that live in damp places, for in their case the risk of injury by rapid transpiration is slight. It will be observed that the attractiveness of the flowers of the marsh marigold is due to the coloured sepals. The petals are not easy to discover, for they are dwarfed and converted into nectaries to hold the honey. It is a striking instance of the co-operation which is so common in the plant world, an organ abandoning its ordinary function and entirely altering its character in order to perform some other service for the general weal.

* * *

Another of our early spring-flowering plants which has the reputation of being poisonous is the wood anemone, and no doubt this property is as useful to it as to the marsh marigold. It also is a member of the ranunculus family. But the flowers depend for their fertilisation on certain insects which come to feed on the pollen and in doing so scatter it about. Unlike those of the marsh marigold, they contain no honey, so the petals are entirely wanting. As sepals are generally stronger in texture than petals it is not surprising to find that flowers which owe their attractiveness to coloured sepals generally last longer than those with petals, and as most of them open early in the year or for some other reason are not likely to be visited by insects in a short time, this quality is most useful to them.

One of the most interesting phenomena is the action of plants under the influence of the weather. Many flowers, such as those of the common Herb Robert, are upright on fine days, but bend down at the approach of night or of rain. The object evidently is to prevent the pollen from being spoiled or washed away by dew or rain. Some like the crocuses, under the same circumstances, close up their petals instead of bending. When these movements do not occur, the flowers are sufficiently protected in their ordinary position. It is for this reason that the majority of bell-shaped flowers hang downwards, as is seen in the Canterbury bells. In some cases, no doubt, they are set very nearly at right angles to the stems, but a few drops of rain lodging at their extremities are sufficient to depress them. Another group—the one containing the primroses—presents some interesting features. Here the flowers, though naturally upright, do not droop when wet weather comes, but the tubes are so small that rain cannot easily enter, especially as minute hairs arrest its progress, and the petals are thrown back to run it off.

* * *

No one, except the rat-catcher, can honestly say that he, or (still less) she, appreciates the presence of rats, which, in the interests of the community at large, must be destroyed. It is quite impossible to oust such cunning pests by trapping, and dogs and ferrets are useless in many situations, by taking up their abode in which rats show a good deal of common sense. The only effective means of getting rid of rats, though not necessarily of their bodies, has been till recently by poison; and poison, though laid in the least risky manner, few would care to use with other and absolutely safe means available. The most up-to-date and (conditionally) effective method is to bait with virus, which gives rats and mice only a fatal disease. It is to be noted that the "safe" disease takes about ten days to do its work—the "risky" poison about ten seconds.

Bygone Days.

As the notes of some sweet singer
Live in echo, soft and low,
Thoughts entwine, and memories linger
Round the days of long ago.

April days of joy and sorrow—
Childhood's tears that lightly flow,
Tears to-day and smiles to-morrow—
Careless days of long ago!

Summer days of promise golden,
When life's fairest blossoms blow,
Full of sunshine were those olden,
Happy days of long ago.

Autumn days, of haunting sadness,
Hopes that fade, hot tears that flow
For the vanished hours of gladness—
For the days of long ago.

By the flickering firelight dreaming,
Shadows come, and shadows go,
Ghost-like shadows, to my seeming
Spirits of the long ago.

C. E. MARSHALL HALL.

B.E.N.A.

(British Empire Naturalists' Association.)

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B.E.N.A. Fund.—This little fund exists for the purpose of defraying such small items of expenditure as are inevitable in the working of a large association which charges no fee for membership. Amount previously acknowledged, £15 13s. 3d.; 1s. 6d., William B. Patch; 5d., Sidney J. Pratt; 1s., Alex. Wason; 1s., E. Cook. Total, £15 17s. 6d.

Affiliated Societies.—An important meeting of the Hull Junior Field Naturalists' Club will be held on April 5th in the Oddfellows' Hall, Charlotte Street, Hull, to commence at 8 p.m. Mr. R. J. Porter, F.C.S. (president), will preside, when a lecture will be given by Mr. J. W. Boulton, M.C.S., B.E.N.A., entitled, "Life History of a Butterfly." Young men interested in this subject will be welcomed. There will also be special exhibits. On April 19th the club hold their third annual meeting.

Schools Mutual Aid Scheme.—This scheme continues to work most successfully. The Hon. Cordelia Leigh has received the following letter:—

London County Council School,

"Shillington Street, Battersea, S.W.

"Dear Madam,—I am extremely obliged to you for your letter of the 26th ult., and the views you so kindly forwarded to the boys.

"You will, I am sure, be very pleased indeed to learn that the scheme is in full working order. We received a second batch of letters, drawings, and specimens from Gloucestershire this morning. Mr. Thomas informs me that the Cambridge boys are 'delighted,' and adds: 'I can assure you this exchange of letters and postcards is doing the country lads a great deal of good.'

"The Battersea boys have also derived a very considerable amount of pleasure and instruction, and the scheme has been the direct means of imparting additional reality into our lessons in reading, writing, composition, history, geography, and drawing.

"I enclose a few letters, in which the boys have expressed their thanks to you for imparting a little sunshine into their everyday life.—Yours faithfully, LEWIS VAGUE."

The letters are very interesting, and show that the children are taking a keen interest in the scheme.

Fresh Schools Linked.—For the exchange of natural specimens, correspondence, etc., between town and country schools, the Blackley Municipal School, Manchester, has been linked with the Stowey School, near Gillingham, Kent. Heads of schools desirous of taking advantage of this scheme should communicate with the Hon. Cordelia Leigh, 32, Chester Street, Grosvenor Place, London, S.W.

Good Suggestion.—The master of Stowey School makes a suggestion for the linked schools:—Each teacher should give the other a list of the things he wants, and if possible, in their seasonal order. Especially should this be so on the part of the town teacher.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Swan's Accident.—The other afternoon, as I was walking along the shore to await the evening flight, I witnessed an unusual incident; at least, in all my twelve years' experience of wildfowling I have never seen wildfowl make a similar mistake in daylight. About thirty swans were flying shorewards with the wind, which was rapidly increasing to a gale from the north-west. Suddenly the leading bird swerved sideways, and attempted to turn, but evidently misjudging his distance, the speed he was flying, and the strength of the wind, he crashed into a tree on the bank, and came down in a heap, breaking branches off the tree as he fell; but in a few moments he waddled over the mud and joined his companions, who had settled in the water, apparently none the worse for his fall.—W. F. BENTLEY.

Strange Death of a Hawk.—In your issue of the 16th inst., re strange death of a hawk, I am inclined to think that Mr. Morrison is wrong in his theory that the bird's death was caused by its attention being drawn to his man, my experience of the sparrow-hawk being that, in pursuit of quarry, it is absolutely regardless of any danger, especially so in hard weather. A sparrow-hawk once killed a linnet within six feet of myself and a friend, both of us having guns. I wish Mr. Morrison had examined the bird's eyes, as I think myself the bird had defective eyesight, which caused it to misjudge the striking distance.—W. F. BENTLEY, Pembroke.

From a Colonial Reader.—On Saturday last I was amused and interested to see two rats stealing quinces. One of them climbed up into the hedge (quince hedges are grown here like nut hedges in the old country) and along the branches, and broke off the fruit, which fell to the ground, whilst his companion gripped them with his teeth, and carried them into their runs.—A. J. ATTRIDGE, Cape Town.

Age of Blackbirds.—While much is written about various marked birds in THE COUNTRY-SIDE, and of their disappearance for a time, then returning to the same spot, I should like to ask what is the average length of a blackbird's life? In the vicinity of some shrubs here has undoubtedly been the home of a pure-white-headed blackbird for about four years. On account of its white head, it has been coveted by many, who would rather see it in a glass case than flying about. Last year it built a nest and brought up four young ones, being the first time I ever found its nest. While I was climbing up to get a look at it they all flew out with such a noise that a woman living near heard them, and called out, "Are you after my white blackbird?" I wanted to know how long it had been her bird. The answer was: "I have set traps for long

enough to catch him, for I should like to have him in my front room." However, it is not dead yet. Once it was caught under a strawberry net, but was let go. I think the old lady's "white blackbird" has had an adventurous life.—J. SHARP, Pringworth, Sussex.

Cats Stroking Glass.—I wish to add my testimony to that of those who believe cats stroke the glass to have the window opened for them, and for nothing else. My cat has done so for many years, and does it several times a day now. When he wants to get into my sitting-room from the garden, he does not appear to have any agreeable sensation, but only great eagerness and anxiety to have the window opened for him; he also does it after dark when the shutters are shut, but I am able to hear him and let him in.—W. L.

Lambs brought up by Hand.—Now that the fields are populated with the season's lambs, the problem of providing for such of these as happen to be by some mischance deprived of their natural support becomes a

very great surprise it started running towards the bank, but was soon re-captured by the bird and again beaten on the ground. This he continued to do until he had killed it, when I discovered that it was not a fish, but a good-sized land rat. The bird now visits the same spot once or twice daily, capturing more rats, which, after having killed, he carries off to the river, which is near by, as I suppose to eat them; but of this I am not certain, never having seen him do so. I may add that there is quite a colony of rodents near where the bird makes his capture. To me this seems something quite unusual.—CHAS. H. MARSHALL, Colchester.

The Pacific Eider.—I should like to add a few remarks to your account of this bird, which appears in THE COUNTRY-SIDE for February 23rd. I am the Scarborough dealer who was supposed to make the mistake of sending it out as a common eider, and, naturally, after being told that I had wrongly identified the species, I made some enquiries

about it. I was aided in my researches by securing another precisely similar specimen on February 21st, 1906, and determined that no mistake should occur this time. I sent this bird, both in the flesh and afterwards, to authorities in England and Ireland, who all pronounced it to be not a Pacific Eider (*Somateria V. nigrum*), but merely the common species (*S. mollissima*). Mr. Howard Saunders, perhaps our greatest British ornithologist, who saw this bird, says with regard to it:—"The eider is simply *S. mollissima*, with a V left from the larger dark expanse after the last moult. This can be traced in specimens in the British Museum, and Mr. Abel Chapman presented a fine example shot at Holy Island in 1878. I now

question the identity of the 1904 bird, and have done so since I looked into the matter." The true *V. nigrum* is a larger bird than the common species, has an orange-red beak, and a V which runs back far beyond a line dropped perpendicularly from the eye. The Oldham specimen killed in 1904 was of the usual size and weight of *S. mollissima*, had the same olive green bill, and as the photo published shows, had a small V not extending backwards beyond the eye. I, therefore, hold to my original opinion that neither this bird nor the specimen secured last year (now in the museum at York) are anything more than *Somateria mollissima*, the Common Eider.—W. J. CLARKE, Nelson Street, Scarborough.

Holiday Spot for Naturalists.—We think of spending our holidays in July on the Clyde. Can any reader inform me of a good centre for natural history exploring, with sands for children? What is Wemyss Bay like?—"HOLIDAYS."



Photo]

Fostering an Orphan.

It is not at all uncommon to bring up lambs with the bottle.

pressing one. Fortunately, they easily take to hand-feeding from a bottle, and a lamb so reared is one of the prettiest and most amusing of pets—for a time. But, unfortunately, it is the nature of lambs to grow into sheep, and a pet sheep is not the most desirable of animals. Its friends do not like to convert it into mutton, and its playful familiarities in the way of butting and intrusion indoors are rather apt to be inconvenient to them.

Do Herons Eat Rats?—About a week ago I saw a heron watching something near a stream of water, which runs not far from my garden. In a short time the bird captured what I supposed to be a good-sized fish, but as I had never known any fish to be in this small stream, I felt a bit surprised. The next morning I saw the heron again on the bank of the stream, when curiosity prompted me to watch him very keenly, when I saw him again capture what I supposed to be another fish. This he carried to the meadow and commenced beating it most violently on the ground. Then he laid it down, and to my

[W. Reid.

A Gluttonous Plant.—There is no more wonderful plant than a *Nepenthes*. Its stems, roots, flowers, and fruit are quite ordinary in character, but its leaves are one of Nature's masterpieces. The lower portion is commonplace enough, being not unlike the leaf of a *dracæna*; the upper portion is, however, quite unlike anything else in nature. The midrib of the leaf is elongated and wire-like; when young, it twists round anything it touches, like a vine-tendrill, and so serves as a holdfast. At its apex is what we call a pitcher—an organ something like a hot-water



Photo.] [S. A. Gamble.]

The Pitcher Plant—*Nepenthes*.

The cunning trap is shown which catches and drowns insects.

jug without a handle; its rim, like the gills of a fish, and its lid a mere make-believe after it has opened, for it never shuts down again. The inside of the jug is a cunning trap, and at the bottom is a digestive fluid, which first drowns and then "salivates" the insects that are caught. No one has yet offered an acceptable explanation of this extraordinary character in a leaf. Traps and allurements in plants usually have to do with fertilisation and reproduction, but the pitcher of *Nepenthes* means nothing except gluttony. Yet the plant itself is easily kept in vigorous health with no stronger food than is afforded by peat fibre and sphagnum moss. Still, there the plant is—wonderful, mysterious, and, in a way, beautiful. There is a fine collection of both species and hybrid *Nepenthes* at Kew, one of which is here figured. The pitcher shown was a foot long, and held over a pint of water.

Mummy Wheat.—In a recent number of THE COUNTRY-SIDE a correspondent claimed to have seen some peas raised from seed found in an Egyptian mummy's coffin, which claim, however, was virtually disallowed. But in his "Botanical Rambles," I find the Rev. C. A. Johns makes the following assertion re "mummy wheat":—"A few years ago it was announced that a mummy was to be unrolled at the British Museum, and a number of persons interested in the subject were present on the occasion. While the operation was going on, a gentleman who was standing by observed some grains of wheat fall out of the linen folds, and picked them up, with the intention of planting them and seeing whether they still retained the power of vegetation. This he did; one seed grew, soon became a healthy plant, and produced stalks, each of which bore from five to seven heads. . . ." A small wood-cut is annexed, "copied from an ear, which grew from seed produced by this very plant," and showing the seven ears of corn growing on one stalk. Would so good

a botanist as Mr. Johns have made such a statement if it had no foundation in fact?—A. L. G. FOWLER. [It is not conceivable that when a mummy was being unrolled "a gentleman who was standing by" would be permitted to pick up anything which fell from the case. He would, I imagine, have had to surrender the seeds at once. The Rev. C. A. Johns must have accepted some hearsay narrative.—Ed.]

White-bordered Camberwell Beauty.—Some time ago you asked if any subscriber possessed a *Camberwell Beauty* (*Vanessa antiopa*), with a white border. I have a specimen with white border, caught by my sister near Harworth, Nottingham, in September, 1872.—R. E. HODGKINSON, Rotherham.

Frog Spawn.—We are anxious to have some frog spawn, but cannot find any round here, so we wondered whether any reader could send us some. We should be glad to pay postage. There seem to be no frogs, or very few, here. We wonder whether it is too near the East coast (three miles from the sea), as there are ditches and ponds in which they could easily breed.—MISS S. CARROLL-BENNIS, B.E.N.A., Balgare, North, Berwick.

Parasites on Dead Squirrel.—A few days ago, while in some woods near here, I found a large nest in a tall oak tree, and, on climbing up to it, found it to contain a large dead squirrel (male), which I threw down so that I could hold a post-mortem on terra firma. The animal had evidently been dead some weeks, and was partly decomposed, and I was therefore very surprised to find it swarming with fleas. I had always thought that these insects left an animal when it died, and I have often seen them congregate on the ears of a rabbit that had just been shot, preparatory to taking their leave; but these showed no inclination to leave. I brought the tail home in a glass-topped box, and found no fewer than 18 when I put it into benzine.—G. MACKRELL, B.E.N.A. [This seems a remarkable case, as it is certainly usual for parasites soon to leave the body of the host on the latter's death. But fleas seem, in some cases, to be able to sustain life for a long time, and they, in this case, could not very well have found any other host to which to transfer themselves.]

Weasel Killing a Cat.—One of my neighbours was driving over a piece of moorland the other day, when he saw a cat descending the side of a hill with a weasel holding on to the back of its neck. The cat proceeded for a short distance as fast as it was able under the circumstances, at the same time making every effort to free itself from the deadly grip of its enemy. Yet the blood-thirsty little brute retained its hold until the poor cat, apparently from sheer weakness, was compelled to give up. The weasel was so intent upon its victim as not to notice that anyone was near. Eventually a boy, who accompanied my neighbour, jumped off the cart, and by means of a stout stick succeeded in killing the weasel. This was too late to save the cat, which died almost immediately. Is it usual for weasels to attack this kind of animal? I have been frequently told that a cat would be more than a match for so small an enemy.—W. STOKES, Hucknall Torkard. [I expect that the cat was a young one, and had made a clumsy attempt to catch the weasel in the first instance.]

Ravens on the South Coast.—I visited the two breeding places of two pair of ravens on the South coast* last Sunday and Wednesday. They are both nesting. One pair may be successful in bringing off a brood, but the other nest is certain to be robbed, as it can be reached by cliff climbers easily. In this case the birds have chosen the site occupied two years ago, thus confirming the local farmer's statement that they have for years past chosen one site one year, and the other site the following year. The one site is highly situated; the other low.—H. P. O. CLAVE. [*For obvious reasons we do not think it wise to mention the district indicated by our correspondent.—Ed.]

The Microscope.

THE HYDROZOA.

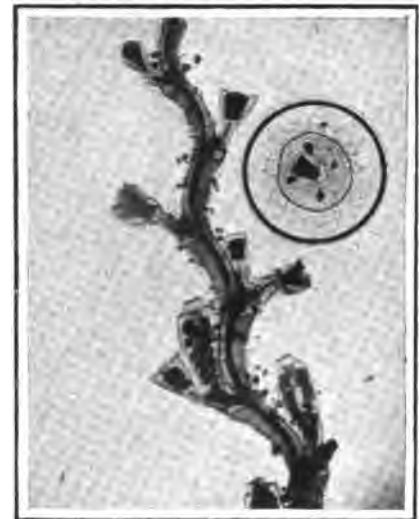
A LITTLE time ago we gave in this column a photograph of a tiny coral colony. Related to the corals in the genealogical tree of sea-creatures are the hydrozoa, presenting microscopic features of much beauty and interest.

All shells, stones, etc., picked up at the ebb, which have the appearance of being covered with short seaweed, should be carefully searched with a pocket lens; a little practice will enable the enquirer to discern that some of this apparent seaweed is of quite a different nature, and, if a little of it is placed in any form of cell on a microscope slide, with a cover glass (being careful to previously add a little water), it will well repay an hour's close study. This "weed" consists of several different kinds of hydrozoa.

The species of hydrozoa figured is called, scientifically, *Obelia geniculata*, and its chief peculiarity is that its life consists of an alternation of generations—that is, one generation is of the plant-like form shown in the illustration, and from this arises, by a budding process, the jellyfish kind depicted within the circle, and the descendants of the second form have again the plant-like appearance.

It will be readily seen, in the first form (which adheres to shells and stones), that the animal then consists of a main stem, from which arise, right and left, short branches, bearing at their terminations structures of quite different appearances.

On the upper part of the stem the appendages are enclosed in wineglass-shaped portions of the supporting envelope, these appendages being the portions to which are assigned the duty of obtaining nourishment, being chiefly formed of a digestive sack, round the mouth of which is a fringe of tentacles which, in waving about, procure particles of living matter and convey them to the digestive receptacle.



Photo]

[F. W. G. Fayne.]

Hydrozo, highly magnified.

Lower down upon the stem are two urn-shaped vessels within which are a number of disc-shaped bodies placed like piles of coins; these are the jellyfish budding off from the stem. They are collected in the urn, and then ejected through its incurved neck.

These jellyfish now start life upon their own account. On referring to the encircled portion of the photo, we see the animal is surrounded by a faint fringe of tentacles which aid it in swimming. In the centre is a digestive tube (deflected to the left in order to show it), and on the disc are four dots. From these latter are cast out eggs which settle on the rocks, and from these eggs the plant-like form again arises, like Proteus of Mythology.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to W. A. Mephram, 42, East Road, Portway, West Ham, E.

What curious meteorological phenomenon is sometimes caused by a great fire, and give a remarkable example of this.

Great fires sometimes produce whirlwinds, due to the fact that a strong upward current is produced by the expansion of heated air. It is recorded that at the burning of Moscow in 1812 the air became so rarified by the intense heat that the wind rose to a terrific hurricane.

Why does the sky appear blue?

The wave-lengths of the components of white light vary, from the red (the longest) to the blue (the shortest). When white light passes through a medium such as the atmosphere, in which very small particles are suspended, the longer waves will be transmitted in greater profusion than the shorter ones—i.e., the shorter ones are more copiously scattered; therefore the light scattered in any direction by such particles should have a bluish tinge. The sky in consequence generally has a blue colour.

How did plaster of Paris get its name?

Plaster of Paris is the name given to gypsum when ground and used for taking casts, etc. It is the most common form of gypsum, and gets its name from the fact that it was extensively found in great masses near Paris. The hill of Montmartre is composed of it. It is also found near Aix, in Provence, and near Burgos, in Spain. The plaster stone of the country near Paris, when ground and mixed with water, is used as a mortar in building; when mixed with glue the material is called stucco.

The introduction of tea into England.

Tea was first introduced into England during the reign of James I. A Mr. Wickham, a servant of the East India Company, received a letter dated June 27th, 1615, and a very small parcel of tea, or *tcha*, as it was spelt. The letter is still in possession of the East India Co. in London. Presents of small parcels obtained from China were subsequently received by wealthy Londoners from India. The mode of using tea was so little known that one party, after boiling it and pouring away the water, tried to eat the leaves. He then tried frying them with butter, but either way they were found unpalatable. It was, however, not until 1657 that any considerable quantity was brought into England. During that year a London merchant named Mr. Thomas Garraway obtained a large consignment, and opened a house in Exchange Alley, both for selling the tea by weight and as a drinking house. The price was often £10 per lb., and was never less than £5 per lb. In 1664 the

East India Company made King Charles the Second a present of tea weighing 2 lb. 2 oz. Samuel Pepys, in his diary, under date September 26th, 1661, says: "I sent for a cup of tea, a China drink of which I had never drunk before." The import of tea into Britain in 1678 was 5,000 lbs., in 1718 it had reached 1,000,000 lbs., and in 1896 227,780,000 lbs. Britain is the principal tea-drinking country in the world.

What is the origin of the superstition that the moping of the owl foretells death?

The owl usually screams when the weather is on the change, and it is at such times that a patient in a dangerous condition succumbs owing to the atmospheric changes which their weakened constitution is unable to resist.

Why are sandy soils unfavourable to vegetation?

Plants depend largely for sustenance upon the moisture and the food elements dissolved in it taken from the ground by the roots. Sandy soils do not retain the moisture long, as they consist of loose particles of non-absorbent earth, and they cannot therefore supply the necessary regular supply of water. In addition to this they are extremely poor in the nitrates and other compounds that go to make up plant foods.

What is the derivation of the terms larva, pupa, and chrysalid?

Larva is derived from the Latin "larva," a mask, a fanciful name given to the caterpillar because the creature is hidden as in a "mask." Pupa comes from the Latin "pupa"—a girl, a doll, from the supposed resemblance of the insect in this stage to a doll or a bandaged child. Chrysalid is from the Greek *chrysalis*—chrysolos, gold, because in this form many insects are gold-coloured. The small tortoiseshell is a good example.

Why won't some cats eat mice?

Probably because cats, like human beings, possess different tastes in eating. Some cats, though they will pounce on a robin, play with it, and eventually kill it, do not eat it, the flesh of the breast of a robin being bitter. Others, notably Persians, will devour them. Occasionally a cat will not eat bread-and-milk, "pappy food" in these cases seeming to be objectionable.

What is the use of tears?

What causes lightning to take different forms at different times?

Why if you wash in hard water does the soap float in flakes upon the surface of the liquid?

Why is it easy for a hoop to remain upright when it is going, whereas it falls down when still?

Why when a plumb line is let down from a high tower does the lead incline a little from the perpendicular towards the building?

Why do connoisseurs of wines close their mouths and distend their chins for a few moments when they are tasting wines?

Why is it that if a bird be painted on one side of a piece of card and a cage on the other, and the card be whirled rapidly round upon a string, the bird appears inside the cage?

The Week's Wild Life in Pictures.

(See opposite page.)

ALTHOUGH the hedge-sparrow (1), by its power of living on "unconsidered trifles," escapes the sad fate by starvation, which overtakes so many of our "soft-billed" birds in winter, it has its own troubles. Its open nest, placed early in the hedges, offers the matchless blue eggs as a prize to every boy, and a convenient receptacle for the cuckoo's egg, the hedge-sparrow being the best-known fosterer of this parasitic bird.

2. The primrose is one of the sacred trio of English spring flowers, the other two being the violet and the daffodil. Nature has no more beautiful picture in April than the hedge-bank or copse dotted with the cushiony tufts of velvety-green leaves and pale yellow, eye-like flowers of the primrose. Gardeners have changed its habit and bred many shades of colour into its flowers, but the best of the garden sorts lack refinement, and are inferior in real beauty to the common primrose. Nor do we care for this child of Nature when it is grown in the trim garden any more than we enjoy seeing our wild birds in an aviary. A primrose by a river brim is more than a whole borderful of polyanthus.

3. The nest of the plover will be eagerly sought for by those anxious to procure the extravagantly-priced early plover's eggs; but unless skilled in the search they will have some difficulty in finding it, the owners being so adroit in leading would-be plunderers a wild-goose chase, and the eggs themselves, with their protective colouration, not by any means noticeable objects.

4. The caterpillar of the oak eggar moth is a handsome hairy creature, of mixed shades of brown, with black and white chequers on his sides. Ordinary insect-eating birds will not touch this caterpillar, but the cuckoo devours him eagerly. The oak eggar larvae feed on various plants. Our picture shows them upon sallow.

5. The small tortoiseshell is one of the few British butterflies that can live through our winters. When roused by unaccustomed warmth it often crawls from its hiding place and gives rise to paragraphs in the papers describing "the remarkably mild character of the season." As a matter of fact, having selected some such home as a dark nook in a greenhouse, it is often "forced" into premature activity. With the mild weather towards the end of March many tortoiseshells have been seen.

6. In spite of his parasitical habits, we must all be sorry to see the cuckoo in trouble. Clever on the wing though he is, he has, in this instance, failed to elude the danger of the telegraph wire, and a cuckoo deprived of the power of flight is in a sad plight, as he is not at all well adapted for travelling afoot, his only method of locomotion on the ground being clumsy hops.

The Zoo in Your Own Home.

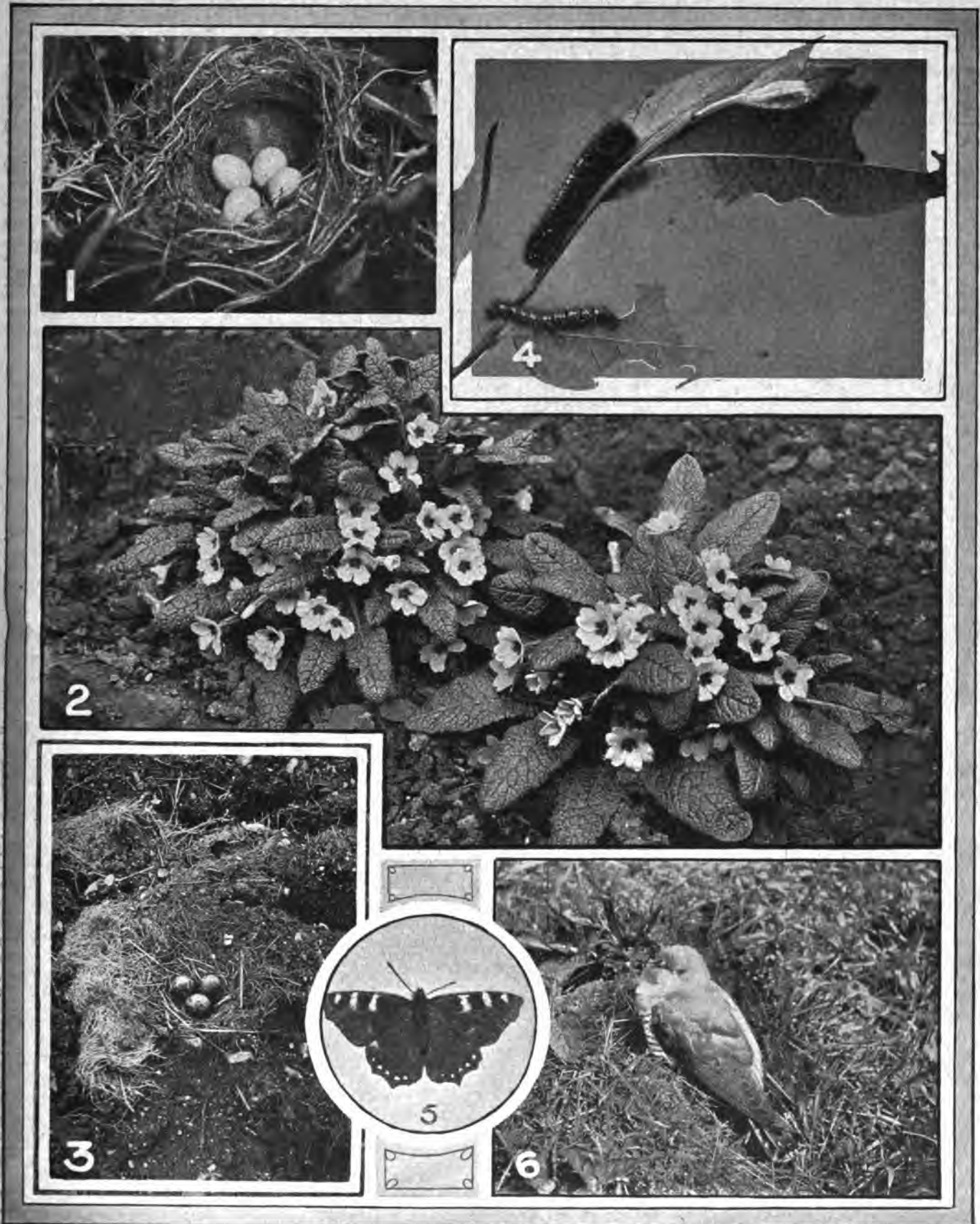
1. Pelicans. 2. Mounting the Elephant. 3. The Elephant Ride. 4. Giraffes. 5. Flamingoes. 6. Polar Bear. 7. The Bear Pit. 8. The Lion Cage. 9. The Lion Cage. 10. Cockatoo Aviary. 11. Spotted Hyenas. 12. Llamas. 13. Griffon Vulture. 14. Chacma Baboon. 15. Brown Bear. 16. Porcupines. 17. Sacred Baboon. 18. Sea-Lions and Penguins. 19. The Lion Cage. 20. Bactrian Camel. 21. Kolbe's Vulture. 22. The Great Indian Rhinoceros. 23. Young Indian Rhinoceros. 24. Mississippi Alligators. 25. Orang-Outang. 26. The Yak. 27. Common or Mountain Zebra. 28. Black-Footed Penguin. 29. Martial Hawk Eagle. 30. Balearic Crowned Crane. 31. The Tiger. 32. The Great Grey Kangaroo. 33. The Ocelot. 34. The Adjutant Stork. 35. The Common Hippopotamus. 36. The Eland. 37. The Brindled Gnu. 38. The Royal Pythons. 39. The Derbian Zonure. 40. The Young Indian Crocodile.

Price 3d. each, post free.

Address, Stereoscopic Department, "The Country-Side," 2 & 4, Tudor Street, London, E.C.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 302.)



1. Nest of Hedge-sparrow, *Accentor modularis* (A. W. Le Feuvre). 2. Primroses, *Primula acaulis* (S. Gato). 3. Nest of Plover, *Vanellus cristatus* (H. W. Hilton). 4. Larvæ of Oak Eggar Moth, *Bombyx quercus*, feeding on Sallow (G. A. Booth). 5. Small Tortoiseshell Butterfly, *Vanessa urticae* (P. J. Butler.) 6. Cuckoo, *Cuculus canorus*, with one wing injured by flying against telegraph wires (T. A. Metcalfe).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, APRIL 6, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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The Little Owl.

By G. H. LEWIN.

THE introduction of the little owl as a resident in Northamptonshire and its spreading into some of the adjoining counties is due almost entirely, if not wholly, to the efforts of the late Lord Lilford, who for many years annually purchased on the London market a number of these owls, which had been sent over from Holland, and freed them in the neighbourhood of Lilford Hall. In writing of them, he says:

"As the majority are too young to fly when first received, I have placed them together in large box-cages in quiet places about the grounds at Lilford, taking care that an ample supply of food is provided once a day."

He also states that he kept no notes of when he first adopted this practice, but for several years some of the owls were occasionally seen and frequently heard in the neighbourhood, but it was not until 1889 that a nest was found in the hollow bough of an old ash tree.

Since then they have spread and multiplied fairly rapidly, until there are now districts in Northamptonshire, and maybe some of the neighbouring counties, where the little owl is, or appears to be, the commonest of the family.

As, however, these birds fly in the daylight at both morning and evening, and are not averse even to the full blaze of the summer sun, there is, of course, far more chance of the ordinary observer seeing them than there is of seeing those owls which do not generally appear until dusk.

The writer, whose work during the past year or so has occasioned him to travel continually over the whole of the county of Northampton, has oftentimes seen the birds in or near the wooded districts, north and east of Northampton, but has not seen or heard a single specimen to the south or west of the county town. This is probably easily explained, as the remains of the old Rockingham forest spread over almost the whole of the north-east portion of the county, and Lilford Hall, where the birds have spread from, is on the eastern edge of this still well-wooded district.

Nests have been found commonly in holes in trees, not generally at a very great height from the ground, and there is little doubt they occasionally breed in rabbit-burrows, the birds themselves having been found therein.

The nests which the writer has examined were simply the feathers of birds which probably they had killed, placed carelessly at the bottom of the chosen hole in old oak or elm trees; these feathers formed the resting-place upon which the eggs were laid.

In one tree the entrance to the hole was slightly more than six feet from the ground, and in it were seven eggs about the size of pigeons', but rounder in shape, which, like most of the owls', were pure white. This was the first nest found by the writer and a friend, amidst great excitement, some six or seven years ago. The hen bird was upon the eggs, but was not seen until she had left the tree and was some twenty yards away, having slipped out of a hole in an upper branch.

The cock bird was sitting on the stump of a bush under the shelter of a hedge some thirty yards from the tree, and flew away when approached with that peculiar undulating, woodpecker-like flight which is one of their characteristics.

Once these little birds of prey have been seen on the wing they are easily recognised, their brown, mottled plumage, short neck and tail, together with their flight and size, being distinct.

The cock birds appear in size, as well as flight, similar to a green woodpecker. The hen bird, however, is appreciably larger. One seen on the castle mound at Fotheringhay on a sunny day in October last appeared to be almost as large as a pigeon. This bird was heard several times uttering its peculiar drawn-out call, which has a tone in it distinctive of a bird of prey. Soon it was seen to fly into an old hawthorn bush, of which there are several round the old, and now dry, moat; and, after sitting there for some minutes, it quickly and softly glided across the moat and began pecking vigorously at a bare patch in the grass, in a few minutes flying back again to the bush. This was repeated several times, but it was impossible to see what the bird was picking up, but probably some worms or insects. The white mottling on its back and wings could be seen beautifully in the bright sunlight. After ten minutes or so it flew away over the adjoining trees, again uttering its call, to which, however, no response was heard.

The cock bird has been several times found to have a perching-place in an adjoining tree or hedge during the time the hen bird is sitting. These places invariably have a goodly number of cast pellets near them, which appear to be principally the remains of beetles and kindred insects.

There is little doubt but that in favourable circumstances these birds could be introduced into almost any part of England with every chance of success. They are very useful, and do little, if any, damage, their principal food being insects, worms, etc., although the feathers in their nest show that small birds also form part of their dietary.

They are known amongst the keepers and country folk of North Northamptonshire as Dutch owls, and are unfortunately too easily and too often shot by them.

It would be good news to all field naturalists to know that these interesting little birds have spread much further afield; this they no doubt will gradually do if not persecuted too much.

There has been a number of records during the past two or three years from the counties of Rutland, Huntingdon, Bedford, and Cambridge, but up to the present time in almost all the instances of their being seen in districts where they are not yet fairly well known, they seem to have been shot; and stuffed and mounted specimens are to be seen in the shops of the local taxidermists in those counties bordering on the north and east of Northamptonshire, where the birds appear most naturally to spread to.

As these birds are seen during the whole of the year in the districts where they are known to breed, and not often in others, it is probable that they do not migrate to any extent, if at all; but the natural instinct of birds of prey to drive their youngsters away when they can take care of themselves has no doubt caused them to spread into those adjoining districts suited to their habits.

Being a day-flying owl, this species is particularly liable to be mobbed by small birds, especially in the autumn; but it has its revenge later, for it can and does catch for food birds, even as large as the thrush, especially in winter, when insects and worms are scarce or impossible to get.

They are jolly little pets to keep in confinement. The writer's brother had a cock bird some years ago, which was kept for a short time in an outdoor aviary. It was quite amusing, and had a curious way of ducking its head up and down; the look on its face appeared very malignant, and, even though small, it was very fierce, and would kill and eat a mouse when one was given to it. It was, however, very shy, and would get out of sight when possible.

The eggs are usually found in May; sometimes, but not often, in April. The writer has records of from four to seven eggs in a nest, and once one only. This, however, was probably due to the nest having been previously robbed, as the eggs were laid in a hole without any feathers, a few feet from another hole in the same tree, which had every appearance of being the original nest.

The nest previously referred to was found on a May 18th, and the seven eggs it contained were but slightly incubated.

The Polar Star.

By NORMAN LATTEY.

If the evening sky be attentively watched, even for only a comparatively short period, it will be noticed that whereas the majority of the stars rise and set in the usual manner, those situated within a circumscribed area in the northern heavens always remain above the horizon, although their positions gradually change.

They seem to slowly travel round and round in circles, one fairly bright star seeming to be stationary. This apparently-fixed point is the celestial pole, and the star is *Polaris*, the pole star.

To be precise, however, it must be said that *Polaris* does not exactly mark the pole, being about a degree and a half distant from it, or nearly three times the apparent diameter of the moon. All stars lying within the limits of a circle bounded by the distance of *Polaris* above the northern horizon, never set, and are consequently termed "circumpolar."

The right of the pole star to its high-sounding title is merely hereditary, and will, in due course, pass on to others in the direct line—or, rather, circuit—of succession.

The temporary holding of this important celestial office is due to the slow gyratory movement of the earth's axis, which gradually swings round like that of a mighty spinning-top until it has completed a revolution.

In doing this, it becomes directed in turn towards each star lying in its track, which, for the time being, fulfils the office of polar star. Now, since there is not a continuous ring of stars to always conveniently provide one for the purpose, it follows that there must be periods when the celestial north falls in barren regions.

Under these circumstances, the nearest conspicuous star serves the purpose, its exact displacement being known. As has already been stated, this is the case now to quite an appreciable extent, and even at its nearest approach, which will not take place until the year 2095 A.D., *Polaris* will still be a moon's width from true north.

Four thousand years ago the post of honour was held by the star *Thuban*, in the constellation Draco (The Dragon), which, as the accompanying chart shows, was situated almost on the path of direction of the earth's axis, its closeness at that time

having been one-seventh that of the present pole star.

It is from the degree of slant of the long-ascending gallery of the great pyramid that the date of its building is known, for it seems, beyond doubt, that this gallery

The date of the building of the pyramid is thus determined to within a century at least. In about twelve thousand years hence, when close upon half a revolution—which takes 25,900 years to complete—has been accomplished, the brilliant star Vega in the constellation Lyra (The Harp) will again be restored to the proud position it once occupied about the same number of years in the past.

It is doubtless owing to this gradual shifting of the celestial pole that the quaint ancient tradition arose of the "Old Dragon" having been cast out of heaven. Needless to say, a similar gyratory motion is going on at the southern pole, where, unfortunately, at present there is no well-marked star near by to indicate the approximate spot.

Polaris, in addition to its other claims to fame, is also a pretty double star of the rank of second magnitude. The small attendant star is a little distance away (or, expressed astronomically, $18\frac{1}{2}$ seconds of arc), and can be discerned in even a small instrument of good quality.

In the writer's $3\frac{1}{2}$ -inch Cooke telescope it is an easy object, as the sketch on this page will show. The spectroscope has detected the presence of a third invisible companion which is believed to revolve round the larger star in nearly four days in an almost circular orbit at about the same distance as the moon is from the earth.

The use of the pole star in navigation is said to have been introduced into Greece by Thales, the chief of the seven wise men of ancient Greece, who derived his knowledge from the Phœnicians. To observers in these latitudes *Polaris* is elevated rather more than half-way between the horizon and the zenith.

At the equator it is always on the sky line, and, at the pole, seems to be fixed immovably overhead, the whole starry vault circulating round it without ever either rising or setting. The two well-known "Pointers" in Ursa Major (The Great Bear) will facilitate the identification of *Polaris* if their line of

direction be followed as indicated by the arrow.



The Pole Star as seen through a telescope.

was constructed for astronomical purposes, and arranged so that the pole star of the period should shine down its entire length.



Chart showing the track of the Celestial Pole.

By calculating back, it has been found that the only bright star that could have been in such a position was *Thuban* or the Dragon, and that this occurred in the year 2170 B.C.

From a Gamekeeper's Notebook.

By "GAMEKEEPER."

IF on April the first you were to tell a gamekeeper that you had found a pheasant's nest, he would probably think you were trying to enrol him in the ranks of those to whom the day is commonly dedicated. But were you to keep watch in the vicinity of the alleged nest, you would be rewarded, sooner or later, by the sight of your keeper "just having a walk round, like," to see, of course, whether the nest was a hoax or not. This is just like a keeper. Though the microbes of egg-fever have begun to attack him, he does not care to admit it, especially as he has the same objection to being "had" as other people. Moreover, he loves to find the first eggs himself.

It is very unusual to find pheasants' eggs in March, laid either by penned birds or those at large in the woods. I once had rather a shock when, in the course of an interview with a very celebrated naturalist in the middle of March, he expressed a hope that my pheasants had been laying well. Sympathetic motives and over-anxiety to be polite, I presumed, must have accounted for his anticipatory mood. I admit, however, that I might have enquired whether many flocks of Dartford warblers had been seen in the vicinity of St. Paul's, but—I didn't.

A symptom which leaves no doubt that the malady from which the keeper is suffering is egg-fever, may be noticed in his inability to pass along a road or foot-path without hugging the hedge, that on the sunny side particularly.

His favourite method of "looking a fence" is with his stick behind his shoulder-blades, held in position by his arms. Every now and then he unsheathes his stick, which, be it noted, is generally a straight young growth of hazel, cut for the purpose, and, with a swift glance to see if he is observed, turns aside a tuft of grass or heap of hedge trimmings. Should the object which has caught his eye be merely a "scrape," or hollow scratched out by a pheasant as a possible site of a nest, the bird is induced to seek a fresh site, when she beholds the levelling performed by the keeper's boot. Occasionally, a small clutch of eggs may be found; these are promptly transferred to a special pocket, kept sacred from the desecration of pipes, whistles, and other odds and ends keepers carry, and the nest demolished.

It would be rather interesting to know how many miles of roadside fences are searched by keepers in April. The theft by rooks or rats of a score or so of eggs does not worry the keeper nearly so much as the discovery that a human being has been before him, and has annexed perhaps two or three eggs. And so keepers through the length and breadth of the land keep the roads well "looked," partly that there should be fewer eggs to steal, and partly to give those who would steal them the impression that the locality is not worth their attentions.

Sometimes the keeper substitutes bad eggs for the good ones found in roadside nests, subtracting and adding daily till he has secured the whole clutch. And when he sees that such a nest has been stolen

by a human thief, the keeper smiles loudly and long.

And as this egg-fever develops quickly, and rages day and night in the keeper's brain, he grows abnormally suspicious, and watches everyone. The fact that you are strolling along the middle of the road with your head slightly inclined to one side is quite enough for the keeper. He is convinced you are an egg-thief; even if he sees you pass the site of a known nest without the least sign of malice aforethought, he concludes that you are one of the knowing ones, too cunning by the smallest gesture to publish the fact that a nest has been spotted. And many weary hours he spends watching to catch you in the act of removing the spoils under the friendly mantle of night.

Blackbirds, thrushes, and gamekeepers would be closer friends' but for the apparent liking of the two former for building their nests a few feet above those of pheasants and partridges. This adds another to the keeper's real and imaginary worries, for the small boy, in his eagerness to get at his customary, if not altogether legal, spoils, is certain to make unconscious havoc of the more valuable eggs beneath.

That there was a great deal of room, or rather necessity, for a popular paper such as the COUNTRY-SIDE, the following two instances will go a long way to prove. I came recently into contact with an old shepherd (of all people) who actually did not know a pheasant's egg when he saw it—and he must have seen hundreds unconsciously, but, as they weren't sheep or hurdles, he observed them not. Again, a lady and gentleman were cycling, and, while walking up a hill, spied a pheasant's nest with ten eggs on the hedge-bank. Evidently believing that possession was nine-tenths of the law, they acted strictly in accordance with their creed, and took the eggs home. Some days afterwards I happened to meet this guileless couple, and they casually mentioned the episode of the ten eggs. A few simple questions, answered with delightful frankness, left no doubt that the eggs were pheasants'. My interest being aroused, I enquired their fate, suggesting that they had perhaps been eaten, and received the startling reply that "not knowing what they were" they had been committed to the ash-pit. Fancy telling a keeper this in cold blood!

I do not think these two will ever again meddle with eggs which they know nothing about, for I casually mentioned that the penalty for each game-egg stolen or destroyed was five shillings. I had almost forgotten to relate that this innocent pair had lived in the country for years—how many were best forgotten.

**If you want to buy or sell
Poultry, Dogs, Cats, Birds,
etc., try our Sale & Exchange.
See Back Cover.**

Additions to the Natural History Museum.

By R. Lydekker.

BY far the most important and striking addition made to the exhibition series since my last note is a plaster model of the restored skeleton of one of the remarkable horned dinosaurian reptiles from the upper cretaceous strata of the United States.

The model is a replica of the restored skeleton mounted in the U.S. National Museum at Washington. The original specimen was collected in the north-eastern district of Converse County, Wyoming, a locality famous for the remains of these extraordinary monsters.

Such bones as were missing from the mounted skeleton (the most nearly complete of all the specimens discovered) were supplied from other individuals of the same species. The skeleton is now being set up in the reptile gallery, where models of the bony framework of the Diplodocus and the Iguanodon have, for some time, occupied conspicuous positions.

The horned dinosaurs were made known to the world by the late Professor O. C. Marsh, who recognised two types, for which he proposed the names *Ceratops* and *Triceratops*. The species represented by the model in the Museum belongs to the latter of these, and is known as *Triceratops prorsus*.

As mounted, the skeleton measures 19 feet 8 inches in length, the skull, which is six feet long, equalling nearly a third of this length. It must not, however, be imagined that the skull really constitutes a third part of the length of the animal, for it is provided behind with an enormous shield or flange, which projects over and conceals the vertebræ of the neck.

The genus *Triceratops* takes its title from the presence of three horns on the skull, of which the hind pair are much larger than the front one, and are curiously like those of modern cattle.

During life they were probably cased in horny sheaths like those of the latter. In the mounted specimen the exact form and size of the single front horn could not be properly determined, so that it may have been considerably larger than in the restoration.

An interesting addition to the unrivalled series illustrating the nesting of birds is a case showing a pair of Buffon's skuas (*Stercorarius parasiticus*) and their two eggs amid natural surroundings. This skua, or "jaeger," as it is called in America, is an irregular migrant to British waters, which seldom breeds south of the Arctic circle, except on bleak uplands.

Alaska is one of the favourite nesting sites, where numbers of these birds may be seen, each pair with a cup-shaped depression in the moss near the marshes, or amid the lichens on higher ground, which does duty for a nest.

The Museum has also secured a specimen of the American tile-fish (*Lopholatilus chamaeleonticeps*), temporarily exhibited in a case placed in the centre of the entrance hall. The species, which inhabits the North American Atlantic coast, is of special interest not only on account of its large size and brilliant colouring, but for its remarkable history.

Amateur Photography.

Notes for April.

By F. J. ERSKINE.

UP to the time of writing these notes the March winds have been replaced by mists which are neither usual, nor calculated to advance photography: But as the month is generally termed "March, many weathers," this little fact is only one more proof of the eccentricity of our climate.

April, however, is rarely false to its showery reputation, and is one of the best and most photographic months of the whole year. The constant downfalls of rain supply the atmosphere which is so notoriously absent in a typical March. The light advances in intensity by leaps and bounds, so that a very brief exposure on landscapes with a screen will give good pictures.

At the same time, it is not wise to try to take, say, a ploughing study, with a three times screen, and a shutter exposure. There are only about three months in the year, and those in the height of summer, when such a thing can be done with success. Even if using a lens at f 6 full aperture with a three times screen, the wisdom of the effort is more than doubtful. The cloud rendering will be perfect, but the detail of the horses, and the shadows of the landscape, will be heavy and unpictorial.

Those who need to study economy in their photography will find that the present fashion of using a certain specified screen with each brand of plates will come to a good deal of money, as the price of glass screens varies from 3s. 6d. to 15s. Most workers who have mastered their A.B.C. of photography will want to try the various new brands of isochromatic plates which are put on the market from time to time, and these will find that to pay 1s. 6d. for the plates and 10s. for the screen is not very pleasant.

The Kodak Company, some time ago, mentioned that they were prepared to supply their gelatine screens adapted to suit any plate on the market. As these cost only 1s., if they are obtainable, they will solve the difficulty in a very satisfactory manner. One of the drawbacks of photography is that it is the pursuit in which the economics *must* be studied.

Of all months in the year, April is the one in which to look out for cloud studies. The constant showers, with the south-westerly winds bringing vast supplies of moisture from the Atlantic, and also the electrical action so generated, cause the clouds to be most notable by reason of their form and lighting.

Speaking generally, the best studies are to be had in the morning, before mid-day. Later on, there is a tendency for mist to form, and the clouds assume a heavy, dull aspect, which is hopeless for photography. Plates should be exposed on these clouds from all quarters, and the nucleus made of a collection of cloud negatives, which will be of the greatest use later on in the

year when picture-making is the work in hand.

For good cloud studies it is best to use the medium speed isochromatic plates. These should be backed either at home, or procured, ready done, from the dealers: If a six times screen is used with f 16 in the lens, the exposure should be from 1-10th of a second to $2\frac{1}{2}$ or even 3 seconds. It is impossible to lay down any rigid rule on this point, as conditions vary in different localities, and specially if the district in which the study is taken is near to the sea or far from it.

It may be taken as a general rule that if a large sheet of water is available, it will much improve the cloud negative, as the reflected light will give more contrast to the picture. The sun breaking through a mass of rather light clouds makes a most useful negative for printing into a blank sky. Sunset pictures should also be taken with care. For all of these the exposure varies, and the only safe advice to give is for the worker to make a few trial exposures. These will be worth all the books and meters ever written or made.

Development in the month of April calls for little special attention. In winter it is necessary to warm the developer, so as to bustle up a laggard plate. In summer the exact reverse must be done, and at times ice will be a great help in keeping the solutions cool and preventing the plate from prematurely flashing out.

But in the spring the temperature of the air and of the developer is about right, and all that is needed is to make up the solutions in the usual way and use them without further trouble.

For cloud studies and spring studies generally, it is as well to dilute the developer. It is generally understood that undiluted developer gives pictures of too harsh a nature, and that a slower working agent gives softer and more delicate pictures.

This is one of the little shades of refinement in work which come from practice, and may be termed personal touches. It is easy to make a photograph, but not quite so easy to turn out a soft and well-graded picture. Sheep studies, with or without lambs, are a feature in photographic work during April and May. It is best to choose a field where there is a right of way, and the animals are more or less accustomed to people passing to and fro.

A hand camera is best to use, without a tripod, as it is important to get the animals at the exact moment, when they are at their best in a pictorial sense. Should there be good clouds or a pretty landscape in the same place, it is best to take a second negative, only this should be a time one, *plus* a screen. When the time for printing comes, the two negatives can be worked in the one with the other.

The largest stop available should be used for the instantaneous exposure, as the detail in the wool of the sheep will not show unless the exposure has been ample. It may be also remarked, by the way, that in this case developing with dilute developer will ensure the detail of the wool showing. Otherwise, it will come out in a rough, felted-looking texture.

With regard to apparatus for the coming season, it cannot be urged too often that the most successful cameras are those fitted to carry plates. They teach caution and economy, as no one cares to carry more than six plates on an excursion; and the problem is to make the most of this limited number.

The sole extravagance really needed is in the choice of a lens. If a good one by a first-class maker can be picked up second-hand, the worker will reap the benefit of the small extra expenditure many times over. A first-hand Aldis lens can be had for a very small sum, comparatively speaking, as also can one by Busch or Beck. The Cooke lenses, and those by Taylor and Hobson, have made themselves a good name long ago. So there is no need for a bad lens to be used by anyone.

Some of the French lenses are most excellent value, but, of course, there is a certain degree of skill needed in their choice. As a final hint, I should suggest that an hour or so spent in re-blackening the inside of the camera and the slides, and in looking over the joints of the tripod, prior to commencing active work for the season, will not be waste of time.

An excellent black varnish may be made by mixing French polish and lamp black together in a tin box lid, to the consistency of glycerine. This is painted on the wood with a camel's-hair brush, and then polished up lightly with a boot brush. The result will be an ebony-black, free from any powdery fragments. The slides and camera should be left in the open air till the smell of the polish has evaporated, or it may have bad effects on the plates if they are put in too soon after.

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the April competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

IF YOU WANT TO BUY OR SELL
OR LET, TRY OUR SALE AND
EXCHANGE COLUMNS.
(See Back Cover.)



Livestock for Profit and Pleasure.



POULTRY.

Guinea Fowls.

By Chanticleer.

SOME readers having asked for information about the much-neglected guinea fowl, of which a large majority of poultry breeders are almost ignorant, I propose to give some particulars in this article.

The reason these useful and profitable birds have been neglected so long is probably due to the lack of knowledge respecting them, especially as regards rearing and feeding, possibly the fact that exhibitions and fanciers may also have something to do with it.

A few years since they had the character of being wild, useless, and ugly fowls, whose peculiar cry rendered them distasteful to the poultry keeper; but their real value is gradually becoming known, and they are now more appreciated.

To those who like a very rich and fine-flavoured egg, and have a taste for poultry of a distinctly "gamey" flavour, I can strongly recommend the guinea fowl, which may be kept with profit and very little trouble by farmers and poultry breeders if proper care and attention be taken in breeding and rearing.

In the past they have, in most cases, been allowed to roam about where they liked, to roost in any trees, and, worst of all, to lay and hatch when and where they felt inclined. On the other hand, those who have reared and kept them in moderate confinement declare their apparently semi-wild habits are not so objectionable as report would have us believe.

The farmer will find the guinea fowl his friend, inasmuch as they are thoroughly good foragers, and do not damage the crops as ordinary poultry do; and experienced breeders assure me that each bird will positively keep an acre of potato ground clear of beetles.

The guinea fowl invariably commences to lay in March, and may be counted upon as a daily layer until the end of July. It will be found the safest and best month for hatching is May, and it is wise to hatch under the ordinary hens, as the guinea fowl shows no desire to incubate until late in the summer, and, seeing that one of the greatest enemies to the rearing of the chicks is damp, it is advisable to hatch and rear in the height of summer.

Watchful care against damp is especially necessary during the first five or six days. Small broody hens should be chosen for incubation, as the chicks are very

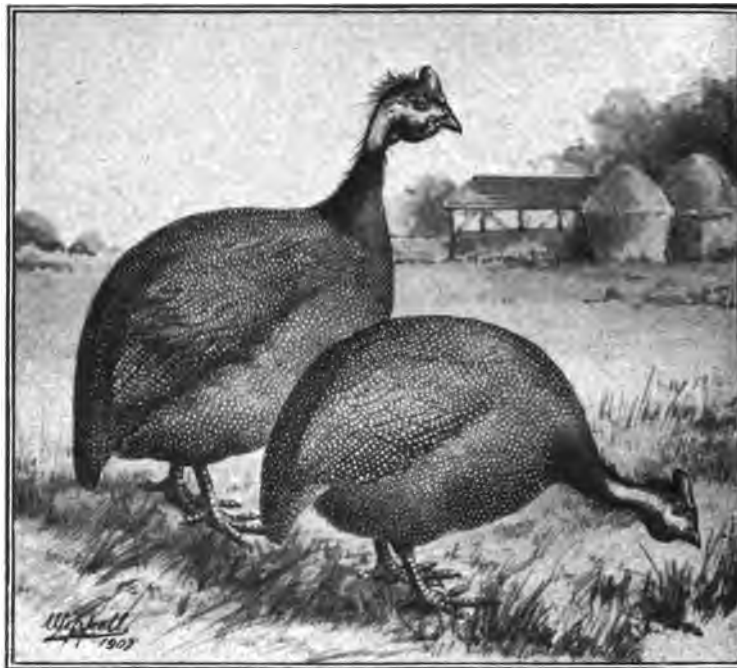
small when they first make their appearance.

The guinea fowls' eggs take 28 days to incubate, and about fifteen of them may be placed under a moderate-sized hen, which should be well dusted with insect powder (as a protection against lice).

The secret of success in breeding guinea fowls is to select or purchase eggs from birds which have been kept in confinement, and are, therefore, somewhat domesticated.

For the first week the chickens must be kept free from draught and rain, but after this critical period little difficulty will be experienced, as the young birds soon become strong and hardy.

The food is somewhat different from



Male and Female Guinea Fowls.

The birds are "gamey" and their eggs have a rich flavour.

that required by ordinary chickens, and must be given oftener. For the first few days I advise ordinary chopped boiled egg and bread-crumbs, but, afterwards, barley meal and ground oats, mixed with warm milk to a crumbly consistency, with plenty of chopped green onion tops, must be added to all soft foods.

This food must be given for fully three weeks, but if, as sometimes happens, diarrhoea sets in, it may be discontinued for a day, and a small quantity of powdered chalk dusted over the food; also apply, at night, a little sweet oil to the vent, which, as in all poultry which suffer from looseness of the bowels, becomes closed.

Plenty of ground oats should be given, and, when the birds are about a month old, it is necessary to feed them well with wheat and dari, also a little bruised maize. I always advise the latter addition, and is generally found to have a tendency to make the birds tame and more content with confinement

As to the tameness, I know some fanciers whose birds have become so tame that they have been considered quite household pets. Of course, all depends upon the management. When they are allowed to run in a yard, or in semi-confinement, it is wise to always feed them at stated times in the same place.

In conclusion, let me add there is no difference in plumage or size between the sexes, which makes the distinguishing of sexes a somewhat difficult task. However, to select the male, one has to observe its shrill shriek, whilst it will also be observed that wattles are slightly larger and brighter in colour than those of the female.

Guinea fowls, although of a strange appearance, are worthy of attention, for they have a lovely soft plumage, yield dark-coloured, full-flavoured, juicy meat in good quantities, whilst the hens lay a deliciously-rich egg of a pretty tint. It should not be lost sight of that these birds are eagerly sought after by the poulterers at the close of the game season.

CATS.

THERE is a popular notion that if a cat is petted and fed well she will become less useful as a mouser. This is a fallacy, for the cat's inclination is to hunt the mouse, not for food, but for sport, and an animal that is enfeebled by neglect and starvation is not in the best condition to successfully chase and capture its prey. This love of sport is not, however, inherent in all cats, but is hereditary in the feline tribe as it is in the human race.

Then, again, the tastes of cats as regards their food is every bit as variable as amongst human beings. One cat will eagerly devour the mouse that she has caught, whilst another will partially disable it and continue for hours to amuse herself by letting it run a short distance that she may leap upon it again and again. Then, when tired of her plaything, she will leave it uneaten.

Some cats will only eat the head of a mouse, some the tail, whilst others demolish the body, leaving both head and tail.

A cat that has been born and bred in a stable where mice abound will sometimes be absolutely useless as a mouser.

Then, again, a petted Persian let loose in a loft will not only make short work of the mice, but will often successfully attack and kill rats. Manx cats are specially clever ratters, and several of the tailless tribe are employed in the Royal stables at Sandringham.

Siamese cats, notwithstanding the blueness of their blood, are ardent mousers, and love the pleasures of the chase as well as any stable-born animal, bred to the sport from tenderest kittenhood. A cat will devote a whole day to the circumvention of a canary in a cage, but she will not spend an hour upon the mice in the store room.

(Continued on page 309.)

Cats.

(Continued from page 308.)

It has been stated that cats do not kill robins; or, if they do catch and injure them, they will not eat them, as the flesh of this pretty bird is bitter. This may be so, but probably the exception would prove the rule, for some cats may utterly disregard a question of taste in the game she has captured.

Blackbeetles do not appeal to one as being a delicacy for any animal to devour, but it is not possible to allow some cats to sleep in a kitchen infested by these pests. Happily, this vulgar taste is not common amongst cats, for beetles are very poisonous.

It is most difficult to stop some cats from catching flies and eating them, whereas others will not raise a paw even to play with them. It may therefore be taken for granted that the question of cats and mice is one of taste and temperament.

"What is one man's meat is another man's poison." Those who have had a long experience with cats and kittens know how impossible it is to lay down a hard and fast rule regarding the feeding of these curiously-organised animals. They have their likes and dislikes, their dispositions vary, and their constitutions are totally different.

No amount of training will make a cat a good mouser. If she is not of a sporting character, and it is not easy to teach a cat who has the keen instincts of her race to resist the fascinations of a fluttering bird.

It has been said that the cat is the hardest animal to teach; it takes years to train a cat to perform some simple trick which a dog would learn in as many days. Yet this is not because the cat is stupid, but rather that she has a desperate independence of character that resents being forced to do anything against her own sweet will.

CAGE BIRDS.

Keeping Soft-billed Birds.

It is a very popular delusion that the class of bird which are usually designated "soft-bills" are much more difficult to manage and cater for in captivity than the class known as "hard-billed." Every experienced bird-keeper of to-day knows that this is quite an erroneous opinion, except, perhaps, as regards a few species of the more delicate warblers, and birds whose natural food, or even a very fair substitute for it, is, for all practical purposes, unattainable in confinement.

The terms "soft-bill" and "hard-bill" are in themselves misnomers, and convey no definite idea or information to the novice. They are applied loosely in a general way, "soft-bill" to indicate insectivorous birds, or those whose natural food consists mainly of insects or similar items, and "hard-bill" to indicate those whose natural food consists of seeds, grain, and vegetable substances. How unreliable such terms are is apparent when one endeavours to illustrate them with example. Thus, a lark, or even a jay, would come under the designation "soft-bill," though they have beaks that are anything but soft or tender; whilst a dove or a pigeon, with a really soft and fragile beak, would be a "hard-bill," feeding, as it does, on hard grains and corn.

Probable Cause of Error.

It is not difficult to see how the wrong opinion about the keeping of soft-billed birds may have originated. At one time it was the general custom to feed all birds of this class on a greasy, indigestible compound known as "German paste," with the addition of bread-crumbs and crushed hemp seed. Kept on such a diet as this, the birds certainly were delicate and very short-lived; and no wonder, for one might just as well expect a man to thrive on a diet of sawdust and hay as an insect-eating bird to flourish on such food.

The Rational Diet.

Given a proper diet, which approximates, as far as possible, in quality if not in kind, to their natural food, this class of bird is just as easy to preserve in health and, on the whole, as long-lived as any of the seed-eaters. Neither should there be the least difficulty in procuring such a diet in these days, when the manufacture and supply of bird foods has been reduced almost to a science.

An excellent staple food for the vast majority of insectivorous species consists of a mixture of two parts bread-crumbs, one part preserved yolk of egg, and one part of ant's cocoons, made into a crumbly, moist state, with a little mashed boiled potato, or grated raw carrot. Then there is quite a large variety of insect foods on the market which may be added to this staple in greater or less quantity according to the delicacy or hardihood of the bird in question.

Fresh ant's cocoons, wasp grub, and gentles may all be purchased in their respective seasons; mealworms are always obtainable; locust meal, so-called, may be obtained in some places, dried flies, a species of water beetles and their eggs (sold under the name of Zeke), and finely-ground Crissel as used for poultry-feeding. All these items may be bought of almost any large dealer.

Then there is the infinite variety of live insect life which may be collected almost anywhere for nothing. Beetles, cockroaches, caterpillars, maggots, or rose-blight, green-fly, spiders, flies, small earthworms, and larvæ of various kinds, are but a few of the things one may collect almost anywhere, and with these as an addition to diet given above, all the insectivorous birds will thrive amazingly in confinement, and live as long and give as little trouble as the average seed-eating bird. Fed and treated on lines similar to these, many of the sick birds we are asked about would rapidly acquire a new lease of life.

DOGS.

The Hon. W. B. Weatherby and his sister have resigned from the Great Dane Club.

It is now become a fashion to hold "matches of dogs." At these one fancier, who believes in his dog, backs him against another fancier's dog on points, etc. A judge is appointed, and the dogs win on their merits as per the scale of points laid down to govern such matches. Sometimes a brace from the same kennel are backed against each other, and no one is happier than the owner to find which of the brace is the better. In this class of competition there is, unfortunately, some gambling attached, but so far it has been fairly harmless.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

London Notes.

BLACK-HEADED GULLS at Lambeth Bridge already (March 18th) have back caps, some showing the face still white.—(F. M. Heward.)

Early Nests.

LONGTAIL TIT's nest nearly complete at Potton, Beds., on March 15th.—(J. H. Symonds.)

Early Migrants.

NIGHTINGALE heard and seen by myself and two friends walking along the high road between Sidcup and New Eltham, Kent, on March 16th.—(J. Connell.)

CUCKOO sitting on telephone wire and calling at about 5.30 on March 17th, at Charing Cross, Glasgow; from "News" over signature "Naturalist."—(Sent by L. Mitchell.)

Marked Birds.

BLACKBIRD: Hen seen at Redcott, with one or two white feathers in its tail, only visible in

flight (no name); creamy-white specimen feeding in a back garden in Springfield Terrace, Milnrow, Lancs., about 7 a.m., on March 13th, not heard of since.—(J. Smith.)

Birds Seen.

POCHARD: Flock of ten again on Higham's Lake, Walthamstow, March 7th-10th.—(C. L. Collenette.)

HERRING-GULL: A tame individual at Southwold Pier, Suffolk, "will fly up when anyone he knows well whistles, and take bits of fish off your head."—(T. M. H.)

Answers to Correspondents.

Strange Behaviour of Frog.—The frog that was caught hugging a goldfish was not sucking its brains, as the gardener thought; this is a feat of which it would be quite incapable. It was simply under an aberration of instinct to which frogs are liable now, in the pairing season; this makes them seize and firmly clasp fish as if they were their mates, in case they do not find the latter.—(to E. Tomlinson.)

Ticking in the Wall.—This sound is made by a beetle, the so-called "Death-watch," as a call to its mate; it was formerly regarded with much superstitious dread as a prognostication of death to some inmate of the house.—(to H. Pitt.)

Rooks Deserting Rookery.—Your seeing a rook suspended dead at the top of a tree when the rookery was deserted points to some accident to this individual, which no doubt frightened the rest away. They would not be likely to leave the place in disgust if they had killed it themselves.—(to N. H. Hunt.)

Use of Face-Gland in Antelopes.—The peculiar-smelling secretion produced by the face-glands of antelopes is supposed to serve the purpose of enabling them to trace each other out by scent, and so find mates or keep together in herds, this being the usual use ascribed to scent-producing organs.—(to W. E. Foster.)

Canker in Cat's Ears.—I am afraid your cat has canker of the ear very badly, and of long standing. As the boracic powder and sulphur have failed, I would recommend you to write to Mr. Wilson, Ashford, Middlesex, and ask for a bottle of his canker lotion, explaining the symptoms.

Blue Tits and Fruit Trees.—No, tits do not do harm in fruit trees; unlike bullfinches, they do not want the buds themselves, but any insects they may find, and so do good.—(to H. Pitt.)

Breeding of Turtle Doves.—Turtle doves certainly ought to breed in Lancashire, as they have been recorded as having done so in Durham, Cumberland, and Northumberland.—(to G. R. Clarke.)

Getting Rid of Sparrows.—This is a very difficult matter; try and get a local bird-catcher to net them, or shoot as many as you can, which will tend to make the survivors shy. Never let any build about your place at any time.—(to A. Grant.)

Change of Coat in Stoats.—The change into the white "ermine" dress appears to be by a bleaching of the hair; not a moult. The time it takes no doubt varies individually, as does the amount of change.—(to L. M. Curtis.)

Cuckoo Problem.—The statement you mention, made about 20 years ago, about a hen cuckoo having been seen with bared breast, and followed by young calling for food, would hardly be accepted unless some good original authority could be quoted for it. It certainly has not gained general acceptance.—(to H. B. Turney.)

TO "WHAT IS IT?" COMPETITORS.

It has been impossible, owing to our having to go to Press early in the holiday week, to publish the result of the supplementary *Vivella* What Is It Competition. This result will appear next week.

The Garden.

Work for the Week.

The Kitchen Garden.

CELERY may be sown in a warm corner, out of doors on a bed in which there is plenty of manure, and this sowing may prove to be the most successful. Chicory: Sow thinly in drills to provide plants to be lifted in autumn for blanching. Herbs in variety may now profitably be sown. Kidney Beans: Although there is a decided risk of its destruction by frost, it is worth risking, a sowing to be made in a sheltered position. Sow again at the end of the month. Lettuce: See that, by continuing to make sowings and plantings out, there will be a continuous supply of this ever-welcome vegetable. Onions for pickling to be sown thickly upon poor soil.

We sometimes hear a desire expressed for a greater variety of kitchen garden products. It may, therefore, be helpful to give a list of some of the vegetables least prominent in popular favour, which may be sown or planted out at this season: Angelica, cardoons, celeriac, chervil, Chinese artichoke (*Stachys tubifera*), globe artichoke, good King Henry (*Chenopodium*), Gourds in variety (sow now in heat), Indian corn (sow now in gentle heat), salsify, scorzonera, and shirret.

The Hardy Fernery.

As it is a good time for dividing and transplanting ferns, this department should now be overhauled, or, if no particular place in the garden is set aside for the hardy ferns, one might certainly with advantage be created. Even amongst British ferns alone the choice of subjects is an extensive one, and, grown (as they may be) together with hardy cyclamens, gentians, primulas, and the like, delightful effects may be produced. The fern hawkers is so often a despoiler that we favour purchase from a nurseryman.

In the town gardens, ferns are generally confined to the shadiest and least attractive corner. Even so, and, lacking all cultivation, they commonly push up bravely and make a good show in late spring. Indeed, they are amongst the most desirable of plants for towns.

The ideal hardy fernery is one skillfully constructed of rockwork and tree stumps. It must be sheltered, have good drainage, and a good depth of soil in the pockets for the growth of the ferns.

Violets.

To obtain fine flowers in autumn, winter, and spring, it is essential that a start should be made at this season with young plants. Stock plants may be divided, the young crowns being planted about nine inches apart in rows one foot asunder, and the old crowns thrown away; or a preferable plan is to utilise rooted runners that



Vanda Sanderiana.

This wonderful orchid is at Kew and cost £25—a very small sum for such a plant.

have been previously pegged down.

Violets are best suited by a north border if the soil is light, but on heavier soil they will be likely to succeed on a west or east border. A well-manured, finely-pulverised soil, with either a mulch or good surface cultivation, and watering in dry weather, are all important items in violet growing.

Their cultivation in frames continues to grow in favour; to undertake this, a stock of extra fine young plants will be required in September.

Marie Louise and Swanley White (doubles), and La France, Princess of Wales, and The Czar (singles) form a very good selection of violets.

Walks and Edgings.

Gravel walks should now have attention. Fork up the old surface to a depth of a couple of inches before laying down the new gravel; level this very carefully, and endeavour to get it thoroughly rolled before the advent of rain. The application of a weed-killer during a fine spell will save a lot of trouble in the future. Be very careful, however, to keep it well away from grass, or other plants at the sides.

Box and other plant edgings will benefit greatly in appearance by being taken up

and replanted, if this has not been done for several years. Ivy, sweet briar, butcher's broom, etc., and even parsley, all form attractive edgings for a garden that is well kept up, and we recommend the use of any of these to our readers.

Asparagus.

The seeds should be sown now. Rake the bed over in the morning, and sow thinly in drills two inches deep, and a foot apart, in the afternoon. Mark the rows, and do not make the soil too firm.

Use the very best seed obtainable, and sow it sparingly. If plants are preferred to seeds on the ground of time-saving, seedlings not older than two years should not be invested in.

Planting will require two pairs of hands. The plants are to be placed so that the roots will be equally distributed and perpendicular, and covered over so that the crowns are about three inches below the surface.

It is important that the beds should be kept clear of weeds. On well-manured soil weeds will grow with astonishing luxuriance. The question of variety is not one of the first importance. In the production of good results high cultivation is the predominant factor.

It is considered that the fine produce of the French growers is, in

part, due to their selection of plants that bear little or no seed.

Sander's Vanda.

A Wonderful Orchid from the Philippines.

WHEN living plants of this orchid were introduced from the Philippine Islands some 25 years ago, and sold by auction in Stevens' Rooms, Covent Garden, there was much excitement among fanciers.

Beautiful and fantastic in their colours as all the cultivated vandias were known to be, this new one eclipsed them all.

Some of the plants had stems as tall as a man, their leaves arranged like the strands of a feather, and their flowers borne on stout spikes, each flower suggesting a gigantic moth with outspread wings coloured mauve and golden-yellow with lines and marbling of bright red.

They measured five inches across, were almost leathery in texture, and they remained fresh two or three months.

There were soon plenty of plants of it to be had, but alas! the conditions of a tropical island could not be reproduced in a greenhouse in England; consequently, no gardener can claim to have kept this orchid alive more than four or five years.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 100. VOL. 4.

APRIL 13, 1907.

1d. WEEKLY.

Edible Birds' Nests. A Notable Chinese Delicacy.

By PERCY COLLINS.

Illustrated from photographs by the Author.

THAT the Chinese are, among other strange things, eaters of birds' nests is a fact fairly generally known to Western civilisation. Comparatively few English people, however, have ever seen examples of the nests in question, and the accompanying photographs may prove interesting to many readers of THE COUNTRY-SIDE.

The first shows a nest, containing two eggs, as it is built against the cliff face, usually in a cave near to the sea. The "esculent swifts" are found all over the Malay and Philippine Archipelagoes, wherever there are caves to afford shelter and protection, but they are particularly numerous in Java and Borneo, from which Islands come the chief supply of nests.

Crawford, in 1825, estimated the value of the nests annually imported into China at £243,000. This may, or may not, have been the case; but at the present time the figure would probably be more correctly placed at from £15,000 to £20,000.

One writer on China tells us that the best nests sometimes realise as much as 3,500 dollars the picul of 133 lbs. in the open market, or more than £5 ros. per pound. This, however, is probably an exceptional figure.

Moreover, the old or dirty nests in which eggs have been laid or the young reared are naturally far less sought after than those which have been collected directly the birds had completed them. In fact the older nests are much used in the manufacture of glue.

The nests resemble a piece of fibrous isinglass, and it was at one time thought that they were made from some kind of seaweed collected by the birds. It is now known, however, that they are constructed from a peculiar secretion from glands in the bird's mouth.

As food, the nests are said to be practically flavourless, the soup which is made from them owing its taste to other ingredients which are added. Indeed, the value set upon them by Chinese epicures is

said to arise more from the belief that they possess stimulating properties, rather than from their actual palatableness.



Nest of the Linchi,

Affixed to the face of the rock where the bird builds it.

The rich opium smoker takes in the morning his cup of birds' nest soup for the purpose of strengthening his debilitated frame; while persons attacked by

consumption are advised to take these nests by the Chinese practitioners, who prescribe them also to those reduced by protracted illness.

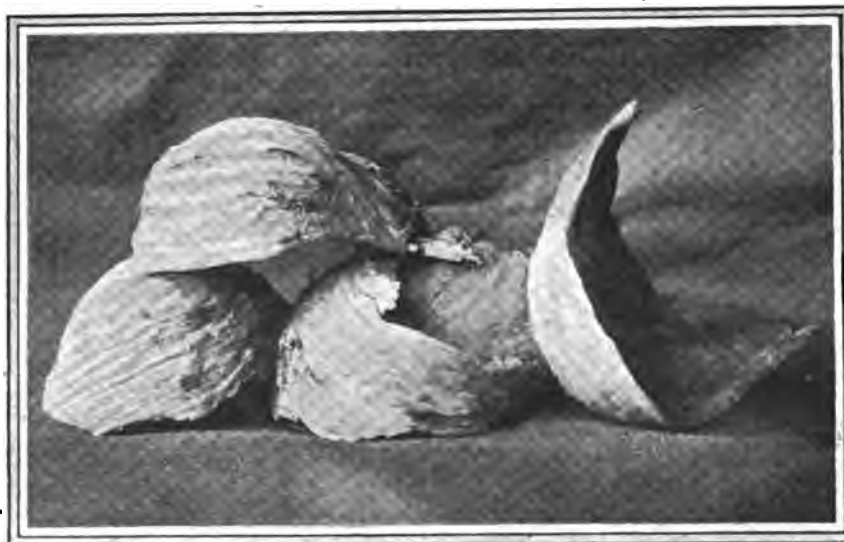
The so-called edible swifts form a genus of some seven species, known as *Collocalia*. All are little birds, and Mr. C. Hose has discovered that the different species of the genus build distinct nests, the valuable white nests, free from moss, being formed by *C. fuciphaga*—the Linchi of the Javanese.

This bird is about five inches long, and has a white abdomen. Like another species, the Lawet of Java, it affixes its nest to the rocks, as shown in one of the illustrations.

The Lawet is small, and in colour is brown above and whitish beneath and at the end of the tail, the latter being forked. The wings are shorter in proportion to the body than those of the Linchi. Dr. Horsfield, in his *Systematic Arrangement and Description of Birds from the Island of Java*, declares that the specimens of the Lawet which he brought home from Java and those which he saw there differ from those described by Latham in that they were uniformly of a blackish colour without a white extremity.

That the Chinese should regard these nests as a delicacy may seem strange to Europeans, especially as the nests have nothing in the way of flavour to recom-

mend them, but it is very characteristic of the inhabitants of the Middle Kingdom, who, in regard to food, seem always to do the opposite of Westerns. We eat the flesh of an animal or bird and throw away the interior, while the Chinese, in many parts of their Empire, at any rate, reject the carcase and make a choice meal of the entrails. So with the nests of these swallows, while a Western might perhaps, if he had no other food, think kindly of the eggs, the Chinaman discards these and takes the nest for his breakfast or dinner.



Edible Birds' Nests.

They have very much the appearance of isinglass and are considered a great delicacy by the Chinese.

Country-Side Notes.

The boundless store

Of charms which Nature to her votary yields;

The warbling woodlands, the resounding shore,

The pomp of groves and garniture of fields;

And all that echoes to the song of even,

All that the mountain's sheltering bosom shields,

And all the dread magnificence of heaven.

—BEATTIE.

THE fields are full of the strife of skylarks every morning now, though if you watch their quarrels you are apt to be disappointed that they should be so inconclusive. Accompanied by so much vociferation and such elaborately hostile obeisances, one expects some serious sort of conflict when at last they dart up from the ground and meet, beak to beak, in the air. For one or more seconds they remain suspended, pecking and musically screaming at each other, and then the affair of honour is decided—one alights on the field of battle and the other at a little distance. Perhaps the latter once more courts combat by his menacing attitudes and quick pecking at the ground; but he very seldom awaits the other's attack, but skims far afield when he sees the winner of the first round approaching for another. Thus the whole sixty-acre pasture becomes like a school playground where, although one serious fight may not take place in a twelvemonth, every boy knows (or thinks he does) whom he can "lick" and who can "lick" him. The few serious fights which do occur arise from the discovery of a boy's mistake in this respect, and now and then, perhaps, skylarks accidentally find that there has been a miscalculation, which can only be rectified by a genuine rough-and-tumble."—From "The Country Day by Day," April 10th.

The question as to the damage, real or supposed, done by birds to buds is a burning one at this time of the year. The tits and finches are the species credited with the damage, and there is no doubt about their picking the buds. But the tits are insectivorous for the most part, and their onslaughts on the buds are not determined by a desire for green food, but by their fondness for insects, so that what buds they destroy would have perished anyhow, and they are really doing good by attacking them. The bullfinch, on the other hand, really eats the sound buds, and hence cannot be acquitted of the charge of destructiveness, though it has well been said that a charge of shot sent into a tree after the depredator, does more harm than the bird could, and it has also been urged that the pruning done by the bullfinch is really beneficial after all.

Of the other finches the sparrow is undoubtedly the worst; he picks buds for sheer amusement in many cases, for he gets his food more easily than other small birds, owing to his scavenging habits, and hence has plenty of time to waste in misusing his beak. Anyone who has kept finches in captivity knows that they are

very fond of whittling, and that it is hard to grow most plants in an aviary where they are kept. Hence it is not remarkable to find several of our species charged with this sort of mischief, which they may readily be tempted to commit.

The fact is, we need a thorough and scientific investigation into the feeding habits of such of our commonest birds as are under suspicion, similar to what was carried out some time ago by the American Board of Agriculture with regard to their familiar species. Stomachs of these, collected all the year round, were examined in numbers, and the results properly worked out—and these results, be it said, generally tended to clear the birds' characters. In one respect the investigation may be said to have been carried too far, inasmuch as it embraced birds like the bluebird and American wren, species against which no complaints were made; and if no complaints are made against a bird no one need trouble about it, although the converse unfortunately does not hold good, as the report showed.

Now that courtship is occupying the birds so much there is a chance for making observations on the vexed question of sexual selection. One thing a great many observers have noticed is the apparent indifference of the hen bird to her mate's elaborate display; indeed, the hen sparrow, at all events, often appears to be positively annoyed by it, as she will frequently attack her mate vigorously during his amatory exhibition and peck him unmercifully, often holding on for some seconds, as if she wanted to "knock the nonsense out of him." Add to this the fact that a female bird will at times make advances to an indifferent male—I have actually seen a peahen showing off to a peacock—and it is easily seen that the problem is not a very simple one.

One thing seems certain, and that is that the courting male, full of vanity as he may appear, is really quite unconscious. If the peacock—to take the stock example—really were as vain as he is supposed to be, surely he would know that the reverse side of his train is anything but ornamental, and be more careful about showing it than he is as a matter of fact. And as the fighting pose of a bird is so commonly the same as the courting one the latter seems simply the generalised way of expressing any sort of emotion, after all.

The matter is, however, one which urgently calls for experiment. One thing is quite certain, that hen birds have distinct preferences, and what is needed to be found out is what these preferences depend upon; there is little actual proof that it is beauty. As peafowl are such typical examples of displayed ornament it would be an excellent experiment to clip off the eyespots from the train of a peacock known to be favoured by the hens and see if they deserted him when thus disfigured for a previously unsuccessful rival. A few experiments of this kind would give us something to go upon in the way of exact evidence.

Though the ordinary colour of pheasants' eggs is a dark olive, you may observe almost endless shades in nests of different birds, ranging from dirty white to a rich olive green. This variety in shading is due chiefly, it is thought, to the individual internal action of each bird on the shell-forming material, since birds at large in the woods, having access to much the same supplies, lay eggs which differ so decidedly in shade. Furthermore, a marked contrast in their shading is occasionally noticeable in a clutch of eggs all belonging to one bird, which seems only to be explained by the presence of some locally uncommon pigment in the material collected by the bird for shell-forming purposes. To decide whether eggs in one nest belong to one bird, their shape is a better guide than their colour.

Among domestic fowls and ducks individual birds lay eggs so uniform in shape and shade that the layer can thus easily be identified. This is owing to their being confined in a run, or, if at liberty, to their comparatively restricted range, so that it is unusual for them to obtain any but a uniform pigment from their shell-forming materials, unlike pheasants, which stroll far and wide in the intervals between laying each egg, finding several varieties of soil, etc. In the same way, it may be observed that "penned" pheasants lay eggs much more uniformly coloured than their relatives enjoying a free range.

Mention was made last week of a means of getting rid of rats and mice without risk to other animals by introducing among them a disease by means of virus. No doubt many who have feared the risks of poison will be only too ready to try this plan; but they may be disappointed unless proper care is taken in dealing with the virus, which *must* be fresh to be effective, should not be exposed to strong light, and the dressed bait, whether it is bread, grain, or meat, should be placed in the rat-haunts in the evening, a spoon or pointed stick being used for the purpose, to avoid tainting by the hands, which would make the rats suspicious. The great thing is to use as bait the food on which rats are feeding locally.

The last of the corn-stacks on the farms will soon be threshed, and it is astonishing during this operation to watch the extraordinary multitudes of common house-mice which some of them contain, amounting often to many thousands. What becomes of the evicted mice it is difficult to say, for you rarely, if ever, see a house-mouse anywhere but in a house, building, or a corn-stack. Probably many of the homeless, wandering mice, making their way to the cottages, etc., fall before the waiting cats. But what becomes of the bulk of the fugitives? It is seldom there are many rats in a stack, the mouse population of which is considerable, and *vice versa*. Both rats and mice live on the corn, and the infinitely stronger rats naturally take forcible exception to their food supplies being consumed by the mice. Apart from this, rats appear to dislike the society of mice, for at the threshing of a

stack you may see scores of mice jump from the lifted sheaves and seek refuge in the rat-holes round the base, where you will find at the finish that the skulking rats have slain them to a mouse.

* * *

In North Hampshire that pretty little mouse known as the harvest mouse was quite plentiful some twenty years ago. In fact, if you walked round a corn-stack and merely prodded the butts of the outside sheaves with a stick you might see a dozen or more. To-day in the same district there is not a specimen to be seen, though house-mice are as much in evidence as formerly. This local disappearance of the smallest mammal we possess is difficult to account for; perhaps readers will offer an explanation.

* * *

Hedgehogs are far more numerous than is commonly supposed. Their habits are interesting, though somewhat mysterious, and, as they are creatures of the night, to study their ways is not easy. How does a hedgehog clean itself? Obviously it cannot lick itself cat-fashion, and would not if it could. Presumably the only cleaning the hedgehog goes in for is the casual grooming while pushing its way through brambles, grass, and leaves. The use of water is out of the question, for the hedgehog hates it. You may find young hedgehogs from May till September, and funny little creatures they are, with their hideous, wrinkled faces and soft white bristles or spines. It seems that young hedgehogs mature much slower than their wild neighbours in wood and field; it is probably quite two years before a hedgehog assumes its full size.

* * *

Those who find a hedgehog curled up in its nest of dry grass and leaves, and decide to take it home with a view to ridding the premises of blackbeetles, etc., will be well advised to guard against the simultaneous introduction of a worse evil. As a rule, hedgehogs possess quite a retinue of fleas, and therefore a liberal application of a thoroughly-efficient insect powder should be administered before too close an acquaintance is made; at any rate, before putting the prickly one into your pocket.

* * *

Country people love to keep a jay in a wicker cage, which looks at first sight very much like a shortened implement for the suspension of "draped skirts." The jay is partly a favourite because of its strikingly beautiful plumage—so rich in contrast—but more perhaps on account of its natural gift of mimicry. This would seem to be a sort of hobby with jays, which they prefer to indulge in for their own edification in captivity.

* * *

A little child of a jay-keeping rustic had been suffering from toothache, and had given much doleful expression to her pain. One evening, when all was quiet and "Mr. Jacob" was supposed to be roosting soundly in the outer kitchen, great was the astonishment of the parents of the afflicted child to hear much groaning and lamentation—as of their child—coming from "Mr. Jacob's" quarters, though they never could induce him to give a public demonstration of his powers, which he used also privately to imitate the conversation of numerous cats.

Everyone knows the ordinary harsh scream of the wild jay, but it is almost impossible sometimes to identify its whereabouts, so numerous are the calls and cries which a jay can mimic to perfection. And it is at this season of the year that jays indulge to a marked extent in their masterly mimicry. Perhaps it is their joy that Spring's promise is half-fulfilled, combined with the advent of courting days, which induces them to give gratuitous entertainments to their woodland neighbours. At one moment you would imagine that moorhens were plentiful, while at another you might conclude that brown owls were vainly attempting to turn the glory of an April day into night, so perfect are jays' imitations of their notes.

* * *

Rooks are well known to be staunchly conservative in sticking to the trees where from time immemorial they and their ancestors have built their nests and reared their young. But when rooks do change quarters, there is invariably a good reason, at least in their eyes. The felling of a few of their favourite trees acts, apparently, as a warning that more may be cut; and so, though plenty for their needs remain, they are often forsaken. In the same way, when a rookery contains beech trees, and disease breaks out, causing the death of a tree or two, the rooks seem to anticipate that a similar fate will overtake all the other trees, and seek fresh quarters.

* * *

There was, till this year, a flourishing rookery of some eighty nests in Hampshire, and though the trees on one side of a lane always looked more suited to the rooks' requirements than those on the other which they had selected and used for untold years, it was not until last year, when a beech tree succumbed to disease, that the rooks, with the exception of occasional unsuccessful attempts, ever crossed the lane to build. Last spring a few did so, while, during the last few weeks, the majority of the birds have "moved in" over the way. And yet there are only two or three beech trees (still quite healthy) in the old rookery, while of the newly-tenanted trees across the road all are beech but two.

X. Y. Z.

The Song of April.

I come, like a hope to a gloomy breast,
With comforting smiles, and tears
Of sympathy for the earth's interest;
And news that the summer nears,
For the feet of the young year every day
Patter and patter and patter away.

I thrill the world with a strange delight;
The birds sing out with a will,
And the herb-love lea is quick bedight
With cowslip and daffodil:
While the showers for an hour or two every day
Patter and patter and patter away.

I sing of love, and my strains console
The wish of the wakening mind,
And their voices float from soul to soul,
And grow on my murmurous wind;
Till hearts with a true love every day
Patter and patter and patter away.

BERNARD MALCOLM RAMSAY.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Animals.

RABBIT born with two heads; died the same day.—(L. Attwater, Brentwood.)

Birds Seen.

BRAMBLE-FINCH, a fine male, feeding along with sparrows and greenfinches, on grain, on March 22nd, at 48, Pevensey Road, St. Leonards-on-Sea. Earlier in the year, when snow was on the ground, many of both sexes came to feed—once more than a dozen—but disappeared soon after the snow cleared off, and this is the first seen for several weeks.—(J. P. Davies.)

CAPERCAILLIE, one shot in Wearld Park.—(L. Attwater, Brentwood.) (Probably escaped.)

THRUSH, flying about in parish church at Redcar-by-the-Sea. It "flew round the top of the church several times, and then alighted on the organ and began to sing. After a few minutes it flew away again and alighted on one of the choir-boy's shoulders."—(S. Cook.)

Early Migrants.

CHIFFCHAFF heard at Lewes on March 19th and 21st (F. N. Colwell); seen and heard at Rake, Hants, on 22nd (E. R. Buckell); arrived or Horsham on 23rd (J. Walpole-Bond); heard at Plymstock, three miles east of Plymouth, on same day (H. M. Hawker); seen and heard at Rickmansworth on 25th (K. S. Smith).

CUCKOO reported at Merthyr Tydfil by two persons (S. W. W.); seen flying overhead across the Rivelin Valley, March 24th (H. Sanderson, Sheffield); heard near Louth on same day (E. Brougham Bach); seen and heard quite close at Heswell, Lancs., second week in March.

SWALLOW seen at Sancton, R.S.O., on March 28th (E. R. Paton); three seen flying over River Bann on March 28th (J. F. Lowry, Coleraine).

NIGHTJAR arrived at Romsey, Hants, on March 23rd, and could be heard close to the house during the night and in morning till about 10.

WHEATEARS seen at Eastbourne on March 22nd (C. H. Howard); at Alverstoke, Hants, on same day (P. A. N.); at Worsling on March 23rd (T. R. Hyde); at Filey on 24th (T. Johnstone); and on same day at Abergavenny (S. W. W.).

SANDMARTIN, two seen at Alverstoke, March 21st (P. A. N.); seen at Siddick, Cumberland, on 26th (J. Ellwood).

Marked Birds.

BLACKBIRD, one with pure white tail, seen at Abergavenny on March 24th (S. W. W.); one with white feather in left wing, a daily visitor through the winter at 48, Pevensey Road, St. Leonards-on-Sea (J. P. Davies); fawn-coloured hen seen in company with normal male bird at Wintringham, Yorks., on March 21st (E. M. Wooldridge); specimen with white mark down centre of each wing, at Penrith on March 24th (S. Booth).

MAGPIE, black specimen seen near Donnybrook, Co. Dublin.—(P. C. Seale).

Insects.

HYBRINA PROGEMINARIA, great swarm of males on March 14th at Mill Hill, Middlesex.—(A. Silcock).

TORTOISESHELL BUTTERFLIES, quantities chasing one another in the sun, at Limerick, on March 24th, on exceptionally hot day.—(H. Fogerty). Tortoiseshells also reported from several other places; also BRIMSTONES, RED ADMIRAL, at Aldershot, March 22nd (F. G.); PEACOCK butterfly on March 21st at Blackpool (J. Grounds).

Wild Flowers.

All kinds of wild-flower records have reached us from all parts of the country since the summer-like weather set in. It is quite impossible to find room for these.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Freak Primroses.—Two years ago an ordinary primrose root taken from a hedge bank was planted in a garden border beside some



[Photo.]

Curious Primroses.

[P. Bamberger.]

polyanthus plants. The first season they came up normal growth, but this year they came as shown in the photograph.—P. BAMBERGER. [The common primrose has its flowers arranged in an umbel on a very short stalk. When this stalk becomes elongated it becomes a polyanthus. There is nothing unusual in a plant with a stalked inflorescence. The time of flowering varies; soil, position, and character of the season influencing it. The leaves live through the winter where there is no severe frost. A dry summer generally causes most of the leaves to wither. There is a wide range of variation in foliage, inflorescence, colour of flowers, and time of flowering in the forms of *P. vulgaris*, which include all the garden polyanthuses. This note will answer the queries regarding primrose growth sent in by many readers.]

Angling Experiences.—Some time back, at the end of July or early in August, I was fishing over at the River Wandle, Beddington, from the bank, and next to me was a man whom I didn't know fishing with a roach-pole 18 to 20 feet long, when a robin came and settled right in the middle of the rod, about six feet from his hand. It stayed some time, not seeming at all scared, although there was a good number fishing, and all very close. He said it was the second time it had settled on it that day, but the first was before I came. He said he would rather lose a fish than strike and frighten the bird. On the same day and the same place I saw a young sparrow attempt to fly across the river, but it failed by about two feet to cover the distance, falling into the water. He seemed at first to have no trouble to float by spreading his wings out, but on attempting to rise and splashing the water over himself he seemed in a bad way; but after one or two tries he reached a root of a tree rising out of the water, and soon scrambled out and vanished into the undergrowth. I may mention he was in a spot where it was impossible to reach him with our rods. At the same place one morning, while fishing from a punt, I saw a large water-rat come out on the bank and

pick up scraps of ground-bait and bread left by people fishing. It seemed not to mind me as long as I kept fairly still. I am told that there are generally one or two kingfishers knocking about in the summer there. Alto-

gether it is a place worth a visit by us in the summer, as the birds, rats, etc., get a lot of food off the banks and get tame, and it is a pretty bit of water; but we can't get in on Sundays, as it is behind a farm, entrance fee 6d. Well back in the summer I turned out about 3.45 one lovely morning when it was almost dark, got my tackle and started off, arriving at the lake about 4.30, took up a swim between two large trees on the left-hand side, and was quietly fishing when a small bird flew past me at a rather rapid rate. I followed it with my eyes, as the size and shape struck me as uncommon, and I did not notice the colour. It settled on a tree, or rather branch, well over water, on the same side as I was, and very shortly after settling I heard something strike the water. I now turned up fishing and carefully moved to the next tree, where I could see the bird better, and at once knew it was a kingfisher. It dived once more and then flew to the other end of the lake, only to return in a few minutes to the same place. This happened about three times, and then a second bird arrived. Later they flew away. I have also seen wild duck there. It seems rather close to London for them—only eight miles—but the keeper tells me he shoots two or three a week in winter.—“REX.”

Misjudgment of Numbers?—A correspondent sees at least 2,500 birds pass by in a second for 20 minutes!!

Everyone who has attempted it must know how difficult it is to judge the number of birds in a flock, especially when on the wing. When at rest a few occupying a judged area can be counted, and then a rough estimate of the whole can be made, but when the birds are on the wing, and constantly changing their relative positions as well as moving forward, the estimation is by no means easy. A recent note in THE COUNTRY-SIDE struck me as containing a rather extravagant statement. Several millions of birds were stated to have

passed over in twenty minutes. (January 5th, “Great Flight of Starlings.”) At first sight there appears to be nothing extraordinary in this, but a simple calculation shows that if “several” means only three, then 2,500 birds must have passed any given point in one second. Are such flocks of birds to be seen in England?—B.E.N.A. 1460.

The Living Sign.—What is probably the most curious tavern sign in England is to be found at Grantham, in Lincolnshire. The house is called “The Living Sign,” because the latter is a large elm tree containing a hive of bees in its branches full of work. A local poet long ago memorialised the sign and famous spire of Grantham Church, thus:—
“Stop, traveller, stop, this wondrous sign explore,

And say when thou hast viewed it ore and ore:
Grantham's two rarities are thine—
The lofty Steeple and the Living Sign.”

The hive is well looked after. Are there any other such instances of living signs in England?—(From *Lloyd's Weekly*).—F. BOLLAND, Chester.

Ravens Nesting.—I have seen thirteen ravens' nests this year. One had two young hatched and five eggs hatching on March 10th, but one bird had only just completed her clutch. On March 10th, 1906, I saw four clutches of six besides. I have seen robins' nests (building), and long-tailed tits' (the external part completed on March 19th). I saw over 100 buzzards when exploring raven territory. One raven hit a buzzard on the back hard when I was at the former's nest. I heard another raven, as I descended to her nest, sit on the cliff opposite (it was in a narrow dingle), and tore up great tufts of grass and turf, although she only had eggs. I have pretty often seen them tear twigs and branches off trees when I have been inspecting nests with young, but never before with eggs only or the bird tearing up the ground.—JOHN WALPOLE BOND.

Nest in Kettle.—I enclose a photo that I took last April of a robin's nest, which the bird had built in an old kettle that had been thrown away on a rubbish heap.—H. P. TAPSON.



[Photo.]

Robin's nest in an old kettle.

The Hubbard Squash.—Twenty-five years ago I raised the favourite American variety, the Hubbard Squash, in England, but could not induce anyone to give it a trial. Owing to the particularly hard rind or shell it will keep through a hard winter, and is a very valuable adjunct to the larder. The orange flesh, when mashed up and mixed with apples or other fruits, makes delicious pie, especially when cooked in the American style.—P. E. LANE, Wimbledon.

A Link with Gilbert White.—You may be interested to publish the following paragraph from the *West Sussex Gazette* of March 7th. Selborne has just lost a link with Gilbert White through the death of Mr. Hori Hale. The deceased's father was a neighbour of White's, and often dined with him. He described White to his son as a thin, wiry little man, and rather eccentric. Mr. White died in 1793. Mr. H. Hale's father died aged 77 in 1854. Mr. White always appeared to be fond of young folks' company, and was always interested in matters connected with his fellow-parishioners. Local links with his memory are now few and far between.—A READER.

Tameness of Birds.—A few days ago, when I was away from home, the pigeon hole door by which the birds in my aviary are fed was left open from about 9 a.m. till evening, and yet none of the birds escaped. I have had them all some time, and they know the feeding-door well. As an instance of the tameness of birds which are well-treated, this evening while I was getting earwigs out of an old tent in a friend's garden, where birds are always welcomed, a robin came and hopped round my feet, picking up the insects which I dropped. Whenever I stopped to look at him he retired just out of sight, but returned again as soon as I returned to my work.—R. C. BARNES, Woodford Green, Essex.

A "Prehistoric" Frog.—Re the photograph in the current issue of COUNTRY-SIDE of a supposed buried frog, I am sending one we found last December lodged in the branches of a flowering currant bush almost three feet from the ground. We thought at first it was a curiously-shaped twig, and have often wondered how it got fixed in such a position and how long it had been there. I think it is hardly probable that it had rested there since the Tertiary period, as was claimed for the one in the photograph, though you will see that it is apparently in quite as mummified a condition. It is one of the most treasured possessions in my brother's "museum." With best wishes to the dear little COUNTRY-SIDE, for which we look so eagerly each week.—(Miss) EVELINE M. COLEMAN. [The frog appears identical with the one supposed to have been buried for geological ages.]

Cat's Many Toes.—I was at a big farm near here recently, and one of the men showed me a cat with eight toes (or pads) on each foot. She had a couple of kittens with her, which had six toes on each foot. The mother is nicely-marked tabby; the father, the man knew, was black. There were four kittens—two black and two tabbies—and, curiously enough, the black kittens had, like the father, the usual number of toes, but the tabbies had six. The man said the cat has had several litters, and always the same—the tabby kittens being like the mother, and other colours like ordinary cats.—CHARLES E. BROMLOW, Rann Lea, Rainhill, Lanes.

The Work of the Ivy.—In the "cutting" below East Croydon Station is a brick wall extending a quarter of a mile and some thirty or forty feet high, which was mostly covered with a luxuriant growth of ivy. A few years ago, to allow the fixing of signal and other wires, the stems of the ivy were cut away between the ground and a point several feet above. Although a portion of that remaining is rather bare, the mass above continues to thrive. This may be seen by anyone travelling on the L.B. and S.C. Railway.—P. E. LANE, Wimbledon.

King Penguins in Captivity.—I enclose two photographs of a pair of King Penguins in captivity. They belong to a Mr. Vere Packe, of Stanley, Falkland Islands. They are very rare in these islands, and have not been known to have nested here. This pair was caught this spring, and the birds are living quite happily with other wild birds in a shut-in run with a pond. Their plumage is magnificent, a brilliant gold patch at the neck and dark green fading into black, which contrasts with the white of their bodies. I am a reader of THE COUNTRY-SIDE, and have come out here to stay, I hope. It is a glorious place for nature study, birds, shells, flowers, fossils, butterflies, all little known. Hoping you will be able to

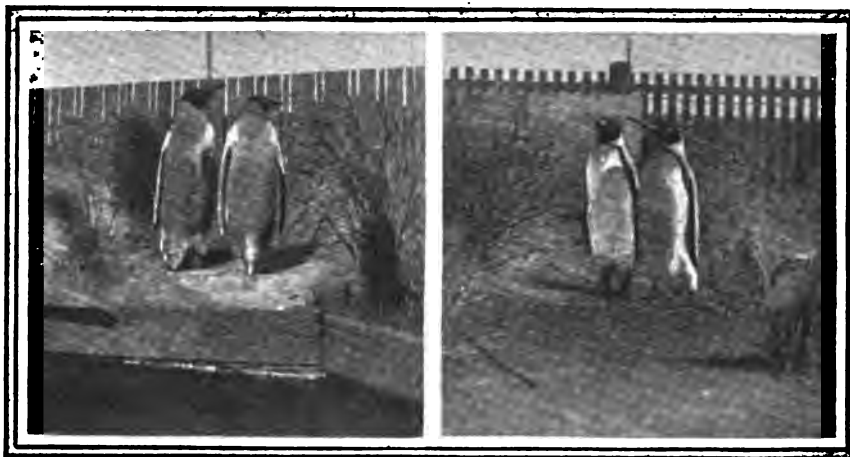


Photo.]

King Penguins in Captivity.

[A. F. Cobb.

These photographs were taken in the Falkland Islands by a reader of "The Country-Side."

help me, or put me into communication with someone who could, yours sincerely, ARTHUR F. COBB, North Arm, Falkland Islands.

"The Country-Side Anagram."—I have often intended writing to congratulate you upon the success of your journal. For years I have longed to see a paper published of the type of THE COUNTRY-SIDE, and need hardly inform you I have been a most interested subscriber from the date of its first issue. I was amusing myself the other day endeavouring to make a suitable anagram from the words, THE COUNTRY-SIDE. The result: "Nice to study her," may perhaps be of some interest to you. With best wishes that the "enlarged" edition may be even more successful.—Yours sincerely, A. STONE, Upper Clapton, N.E.

Nightingale's Hours of Song.—Does the nightingale sing throughout the summer nights? Milton, in describing the coming on of evening in "Paradise," says:—

"Silence accompanied; for beast and bird
They to their grassy couch, these to their nests
had gone

All but the wakeful nightingale—she
All night long her amorous descant sang."

—JOSEPH G. JOHNSTON, Rathmines, Dublin.

A Mature Opinion.—Mr. S. Yeates, West View, Cowfold, Sussex, writes that during seventy years of study of wild life (he will be eighty next September) he has never known so pleasantly instructive a paper as THE COUNTRY-SIDE has been to him.

Astronomy.

PHENOMENA DURING APRIL.

By Norman Lattey.

JHIS month, like the last, opened with the moon on the wane, "last quarter" occurring on the 5th and "new" on the 12th, with "first quarter" on the 20th and "full" on the 28th. Star-gazing will, therefore, not be interfered with during the first and second weeks, and even at the former period not until after midnight. On the 3rd the moon will be in perigee, i.e., at the nearest point in her orbit to the earth, when her distance will be about 230,000 miles.

On the 18th she will be at apogee, i.e., at the greatest distance, viz., 251,500 miles. She will, of course, as usual, occult (or apparently pass over) several small stars during her monthly journey round the earth, but none will be of sufficient brightness to attract attention. Although the moon will have attained first quarter by that date and be fairly bright, a meteor shower emanating from the Constellation Lyra may be looked for during the evening of the 20th to the 22nd.

The sun will probably still be found in a very disturbed condition. March witnessed a number of fierce out-breaks manifested by some magnificent "spots." During the middle of the month the disc was perforated by several conspicuous groups, which, examined through even a small telescope, afforded most interesting studies. The writer, using a Cooke refractor of $3\frac{1}{2}$ inches aperture, employed a "Solar diagonal," and obtained most exquisite views. Such an attachment consists of a short tube, at the lower end of which is fixed at right angles a slip of perfectly clear glass. This enables the concentrated and intensely heated rays to flow uninterruptedly

down the tube, reflecting only a very small proportion through a side opening, where the comparatively feeble image is magnified by the eyepiece. Even then a "dark cap" of smoke-tinted glass is necessary as a screen, not only for safety's sake, but to permit of a lengthened examination with comfort. The very greatest care must always be exercised in solar observations, or the irreparable loss of sight may result.

Excepting Jupiter, all the principal planets are "morning stars," and inconveniently placed. Mercury and Venus both rise only an hour or so before the sun. The latter is, of course, easily discernible owing to her brilliance, and the former may be caught sight of about the morning of the 15th, when it is at its greatest western elongation, or farthest apparent distance west from the sun. Seen through a telescope, Venus looks like a miniature moon a few days before "full." Mars rises soon after midnight, and is visible for about three hours before sunrise.

Saturn may also be picked up rather south of east shortly before sunrise. On the 12th of the month the unusual phenomenon of the invisibility of Saturn's rings—often in the largest instruments—will take place. This is due to their becoming presented edgewise to the earth, which, owing to the inclination of their plane to that of the earth's orbit, occurs twice in a Saturnian revolution, viz., every fifteen years. The invisibility will continue until July 27th, when the edge of the

(Continued on the next page.)

Astronomy.

(Continued from page 315.)

rings will be turned towards the sun, after which both that luminary and the earth will be on the same side of them, and they will become visible again, temporarily, as a thread of light.

On October 3rd, owing to the movement of the earth along her orbit, the rings will once more turn edge-on to us, and vanish again until early in January. In the meantime Saturn will appear a round disc shorn of its usual appendages. Jupiter is still well above the western horizon in the early evening, and a glorious object in a telescope flanked on each side by his four principal satellites. At 10 p.m. on the 12th, however, they will all be found in a line to the west of him (seen to the left through an astronomical telescope which inverts), and in their proper sequence, viz., I., II., III., IV., reckoning from Jupiter outwards. On the 22nd this state of affairs will be reversed; that is to say, they will be similarly arranged on the right or eastern side. On the 26th they will again all be to the left of the disc, but in different order. On the evenings of the 18th and 25th three of the Satellites will be found apparently clustered together.

The variable star Algol (The Demon) in the Constellation Perseus will sink to its lowest limit of brightness on the 11th at 3.9 a.m., on the 13th at 11.58 p.m., and on the 16th at 8.47 p.m.

The Latest Notes from the Zoo.

By Frank Finn, B.A., F.Z.S.

Young Bactrian Camel—Black Mouflon Lamb—Birds Breeding—The Australian Dasyurus—Buff Laughing Kingfisher.

OTHER animals, besides the eland and the dingo, recently alluded to in these notes, have been presenting the society with additions to the collection, notably the pair of Bactrian camels, whose offspring is, at the time of writing this, three weeks old. It is curious to notice how in the little camel the humps are mere flaps of skin lying over to one side, not being filled out as in the old ones.

The black mouflon ewe, left behind in her



Photo.

[W. S. Berridge, F.Z.S.]

The Buff Laughing Kingfisher.

Recently added to the London Zoo.

old pen when the rest of these wild sheep were moved into the renovated sheep-yard outside the elephant-house, has a lamb as black as herself, and the queer couple attract a good deal of attention.

Among the birds, the owls have begun to breed; a great eagle owl has two eggs, but these are useless, as she has no male companion, another of the same species, and the milky eagle-owl, which share her compartment, both being females. The milky eagle-owl has likewise laid already. A pair of English barn-owls have four eggs, and some African specimens of the same species have three, as also have a pair from Mexico.

The society, it will be seen, has specimens of this widely-ranging owl from very remote localities, and there are others also, a very large and fine bird from Australia, and a particularly small and dark one from the Galapagos Islands. All these look more or less distinct, but in a wide series it is impossible to separate them in every case, and so the barn-owls of the world are all ranked as one species, with many sub-species or local races. The Mexican birds are like those I used to see in India, with pale buff breasts spotted with black.

Speaking of variation, I ought to say that the Australian dasyures, or native cats (*Dasyurus viverrinus*) mentioned a little while back, were originally two pairs, one pair of the normal fawn-coloured with white spots, and the other two of a black variety, also white-spotted, and of very quaint appearance. I only saw the fawn pair at the time, but, since then, I regret to say, the males have destroyed their partners, and now there are again only two, but one fawn and one black. As the buff laughing kingfisher, recently mentioned, is so rarely imported, the present very good illustration of it may be welcomed.

The Country-Side Library.

How to Study Wild Flowers.

THIS third impression of the Rev. George Henslow's little book is excellently got up with twelve double-paged coloured plates and fifty-seven other illustrations in the text, and its price—only half-a-crown—is very cheap. The author is examiner in botany for the College of Preceptors, and his experience in this work has enabled him to prepare just the kind of book that will help students to acquire an accurate knowledge of typical British wild flowers, their structure, and their relation to one another. It is a book to save botany from becoming merely a theoretical grind, and will give that interest to the student which is so often lacking in this particular science. His appetite will be whetted, and even if he knows nothing whatever of flowers and botany this book will enable him to start upon their study in an intelligent way. An index to the English names of plants is a useful addition to the book, and there is an appendix giving a list of plants with their uses to man. Published by the Religious Tract Society.

Nature Photographs from Life.

A new series of pocket nature books, published at one shilling, is being issued by Messrs. Bousfield and Co., each containing a hundred reproductions of photographs from life. The first volume deals with some of the smaller British mammals, the shrewmouse, dormouse, house mouse, etc., and is by Mr. Douglas English, B.A., while the second is by Mr. R. B. Lodge, and is upon British birds. Interesting notes are given in each book upon the subjects of the photographs, and the latter are of a very high order, many of them representing great skill and hours of labour.

Guide to the London Zoo.

The fifth edition of the Illustrated Official Guide to the London Zoo has just been published at sixpence. It is well illustrated, most, if not all, of the photographs being different from those in the last issue. A plan of the gardens will greatly assist the visitor. The book forms an interesting popular record of the Zoo. The authorities have also just issued

some coloured picture postcards of the animals and birds, which they are selling at one shilling the set of twelve.

Birds I Have Known.

"I have always loved birds," says Mr. Arthur H. Beavan in beginning this interesting little volume; and as he tells of the birds he has known in his childhood, in his school-days, and since he came to manhood, the reader cannot but catch some of his enthusiasm. Mr. Beavan has travelled in many lands, and his book deals not only with British birds but with those of Oceania, South America, etc. All nature lovers will find the volume pleasant reading. This cheap edition is issued by Mr. T. Fisher Unwin at 2s.

Breezy East Coast Lore.—Readers will be glad to hear that Mr. A. H. Patterson, our "East Coast Naturalist," has completed his new book (Messrs. Methuen) on "Wild Life and Men of Breydon." He describes it himself as "a lively bit o' readin'" and no one who has had the pleasure of reading any of his books will doubt the accuracy of the description. Mr. Patterson has the rare gift of taking us with him when he writes of Breydon Water, with the salt whiff coming from the sea beyond the sand dunes.

The Secretary of State for India has just appointed Mr. T. Fisher Unwin agent for the sale of the publications of the Indian Government. It is, perhaps, not widely known that these publications include a variety of books on Indian history and archæology, art and architecture, botany and forestry, grammars of the various Indian languages—Dafia, Kurukh, Lepcha, Lais, etc.—and the valuable series of maps of the Indian Ordnance Survey.

"Reminiscences of a Skipper's Wife" by Florence E. Patterson, contains a large amount of useful and pleasant information on travelling in Canada, Ceylon, Portugal, Sydney, Japan, Hong Kong, and other parts of the world. It is published at 3s. 6d. by James Blackwood.

Diseases of Fruit.

THE BOARD OF AGRICULTURE have issued a series of coloured diagrams illustrating some of the commoner diseases that attack fruit trees in this country. These diagrams are contained in seven sheets, 21 inches by 15 inches, and they are suitable to hang on the walls of lecture rooms, museums, schools, etc.

Each diagram is accompanied by a brief account of the disease and a prescription for its prevention or eradication printed in large type and also suitable for hanging on a wall. The set is to be obtained from 4, Whitehall Place, London, post free for 6s. 6d. The diagrams have been prepared by a scientific expert. As a quick means of enabling anyone to perceive and understand the diseases which make all the difference between success and failure in fruit culture we know of nothing equal to this set of diagrams.

From a Reader.—"L. M. C." writes from Holbeach, Lincs.:—"Words won't express my appreciation of THE COUNTRY-SIDE. It is more delightful every week, and I am sure it is too cheap."

Have You Anything to Sell?

Try our

Sale and Exchange Columns.

See Back Cover.

Amateur Photography.

The Control Method.

By W. ROBINSON SMITH.

Picture representations of some of the grand old English houses, surrounded, in many cases, by the remains of a moat, we often see bird life most beautifully if more or less accidentally portrayed.

It would appear that the excellence of such photographs of wild birds in a mild form of captivity suggests the control method on which we propose to give a few notes. Briefly, the control method is, in its more primitive form, a photograph of a tame wild bird amid more or less natural surroundings.

Young birds may be removed from their nests and hand-reared in order that they may be photographed from time to time, or, as we say, *in series*. Before dealing in detail with what birds may be so reared, or the manner in which to rear them, it should be stated that all small birds such as tits, wrens, etc., to be successfully brought up require the attention of their natural parents.

Our Editor, we may depend upon it, also thought of the advantages which he would give to photographic enthusiasts in their particular pursuit when he enabled us to purchase nesting boxes which may be affixed near our dwellings, and by which we may have an opportunity of watching and photographing these smaller birds and winning their confidence, which is essential to a natural-looking photograph.

Of course, the real thing is to photograph wild birds in their own wild country, and the *sport* really consists in pitting one's cunning against their wariness; but many photographs of great scientific value may also be obtained by control with the clear profit of being in a position to carefully note the progress of a wild creature to maturity.

All hawks and owls make good subjects for such studies, and they may with care be taken from the nest when but a few days or even hours old. When they have quite reached maturity and are no longer required, they may be set at liberty again. Such birds may be photographed in the nest for the first fortnight, and then regularly, say, every Monday morning, under control.

Many little interesting characteristics which might otherwise escape notice are discovered during the process of rearing. For instance, in a family of young hawks one may be fierce, another affectionate, another may sulk; each, in fact, may possess an entirely distinct disposition, but the real value of such a method, as it is here intended to propose, is in dealing with such birds as herons, etc. A young heron is not very difficult to rear, and may be given great liberty. No cats—the terror of those who pursue this hobby—will ever face up to a heron; at least, I have been diverted on many occasions by watching cats sneaking through a garden where stood a heron blissfully unconscious of their presence. Herons, from their very nature, are almost impossible to be treated in more orthodox manner.

Lapwing, and a few wild moorland birds, may be tamed to a very considerable extent, and many an interesting snapshot may be obtained when they permit one to approach without uneasiness.

As to the rearing, the duck' tribe are perhaps the easiest to control of any species. The eggs may be taken and placed under a hen, and will so be brought up with just that necessary amount of *wildness* in their training which will not alter in any way their natural mannerisms. The writer obtained a photograph of a family of young shelducks which were brought up under a hen and used to swim in a small miniature pond measuring only some six feet square, but which is so constructed as to give one the idea of an absolutely natural lake. A few lessons in gardening, as gardening is understood by the Japanese, would be of the very greatest value in pursuing this hobby, for the Japanese excel in mimicking Nature in their gardens.

This method is not confined to birds only, and is used in the case of small mammals with even greater success—squirrels, for instance, or fox cubs.

In comparing this method with the usual procedure—I hesitate to say proper method—when photographing wild creatures, the difference in aims is so great that little comparison can even be made. This is more scientific, of course, but there is an element of the truest sport in photographing a wild, shy subject, quite absent when the subject has been tamed; but, again, on the other hand, the surroundings, when properly chosen, and the sitter allowed to remain wild enough, and not too wild, a much more artistic and no less scientifically-accurate photograph should be obtained; and then, again, the series of one subject is possible, which it scarcely is when the subject is allowed to remain in a wild state.

Quasi Control.—This differs from control proper in that the subject has *come* of its own accord and been tamed in a garden, while allowed full freedom as it chooses to come and go. It may be invited by any device, as the placing of a nesting-box, or the providing of food in hard weather, or by hanging a coconut by a string, should it be desired to attract such birds as tits, but the object here is more to familiarise the subject than actually tame it, and many who do not use the control itself still make a sharp distinction here.

The great point to observe, however, is that the subject is not to be made a pet of by any means, and it is to be left wild as far as possible; that when the purpose for which it was required is accomplished it may be set free again.

Our

House and Apartment Register.

See the specially cheap rates offered to readers on the back cover.

The Microscope.

THE great water beetle, known in natural history designation as *Dyticus marginalis*, is one of the many denizens of our ponds, for whose anatomy many an enthusiastic microscopist has great affection.

The larval form of this creature is a real terror to its fellow inmates of the water, a veritable tiger in its ferocity toward all, strangers and relatives alike; for this reason, a specimen placed in an aquarium with other creatures would be on a par with a fox shut up in an *en-roost*, an experience that would mean a lively time for every party concerned.

When captured and subjected to martyrdom for the cause of science, his carcass may be made to provide about the finest example of *tracheæ*, or breathing tubes that insect anatomy contains.

By means of fine scissors, divide his integument down the back, taking care not to injure any of the interior organs, then immerse the whole in glacial acetic acid for a few days, then transfer to clean water, and carefully wash away all that will come, gently swabbing and cleaning away all loose matter with a camel's hair brush; repeat the process until the tracheal system is free from its surroundings.



Photo.]

[Copyright.

Pro leg of *Dyticus marginalis*.

Then place the tracheæ in pure carbolic acid, from which it may be permanently mounted in either Canada balsam, glycerine, or an aqueous solution, carbolic having the reputation of readily conforming to either.

In the perfect form of *dyticus*, the male is justly famous for the magnificent object that its forelegs provide; in these the tarsi are developed into a most singular apparatus, the first three joints being as though joined and expanded into circular form.

The under surface of this broad plate is covered with a remarkable array of suckers, or discs, each mounted upon a stem, two of them being much larger in size than the others, and with a fringe surrounding each. Mounted without pressure, this object is one of the finest of the many fine things that the insect world has provided for microscopical observation.

Our Photo. Competition.

Photographs intended for the April competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in. Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded C. H. Wingfield, 3, Courthope Road, Wimbledon.

Why is it that a cracked bell makes such a discordant sound when rung?

When a cracked bell is struck the sound passes through the homogeneous portion of the metal by a series of vibrations peculiar to the composition and method of manufacture of the metal till the crack is reached, when the metal can no longer transmit its own vibrations at the same rate as before, on account of the air space which has not the same rate of conductivity for sound vibrations as the metal has. But at intervals the sides of the crack rub on one another, and during the moment of contact force each other to vibrate together. A moment later they vibrate independently for a fraction of a second, when contact again takes place. Their period of vibration is thus constantly changing, producing non-musical sounds by interference with the rhythmical vibration of the other parts of the bell. If a fine saw is passed between the lips of the crack so that they no longer touch, the bell recovers its musical properties.

When a boy runs with a kite it rises higher. Why is this?

A kite is an inclined plane, and a horizontal current of air in passing beneath it forces it up like a wedge. If the boy runs he causes the kite to move more rapidly through the air in a horizontal direction, and thus increases the relative speed of the air and the kite. The latter accordingly is "wedged" up with more force, just as it would have been had the relative velocity been caused by a freshening of the wind.

Why do shot manufactories have high towers?

Shot is made by pouring molten metal from a great height into water. The tower is therefore necessary, and takes the form of a chimney-like erection, with galleries round the inside at different heights. On these, small furnaces keep the lead in a molten state. It is then poured down the centre well through sieves by means of ladles. The drops of lead, by virtue of "surface tension," assume a spherical shape. The water at the bottom prevents the plastic metal from striking the ground and becoming flattened. To sort the round shot from imperfect specimens they are allowed to roll down a sloping board, at the bottom of which is placed a box at a little distance away. The round ones gather enough speed to reach the box; the others fall short of it, and are so separated. The shot are afterwards passed through sieves of gradually increasing size of mesh and so sorted into different sizes. They are polished by rolling inside a revolving tub or cask. It is said that this method

is the result of a dream. A certain poor man dreamt that it was raining molten lead, and that the lead was changed into shot as it fell into some puddles in the road. All day the man was haunted by his dream. Finally he dropped lead from the top of the village church steeple into water, with the result that he produced shot far finer and cheaper than that which was cut by hand.

Why are ostrich feathers short and downy?

Because the ostrich, being practically a flightless bird, has not acquired, or has lost through disuse, the stiff quills to its feathers which the flying birds have. As a rule the longer and stronger the feathers the more powerful is the flight of the bird. Further, adjoining the stem of a feather are the barbs, and upon these are the barbules—tiny processes that in most birds are more or less hooked in form, those of one feather interlocking with those of the next, thus providing the continuous surface that is essential for flight. In the ostrich, however, the barbules are perfectly flat and straight, quite devoid of the curvature that obtains in other species, and in consequence the cohesion that is so marked a feature with others is entirely wanting, so that the feather substance is loose and downy.

What causes coughing and sneezing?

Coughing and sneezing are caused by irritation of the nerves of the respiratory tract. The irritation may be due either to disease or to the presence of mechanical irritants. The seat of the irritation may also be distant from the respiratory system, as, for instance, in the case of coughing, in the ear or teeth, and in the case of sneezing, in the eye. The acts of coughing and sneezing are involuntary efforts at removing the provoking cause by the inspiration of air and its sudden and violent expiration. In these processes the muscles of the chest, back, and abdomen unite in sympathy to achieve the object. Sneezing differs from coughing in that the blast of air is driven through the nose.

Explain snoring and hiccoughing.

Snoring is the noise produced by inspiration through the mouth during sleep. It is caused by the current of air impinging against and being broken by the uvula. Hiccough consists of a series of short convulsive inspiratory contractions of the diaphragm, the glottis closing spasmodically as the air enters, thus continually stopping it in its course and giving rise to the sounds peculiar to hiccough.

Explain the difference between laughing and crying.

What is the value to the whale of the large development of oily matter which it has about the head?

Why are feathers attached to the ends of arrows?

What English nobleman first made experiments to show the expansive power of steam?

Why are caverns and grottoes famous for their echoes, and why do not the walls of an ordinary room serve equally well for the purpose?

Why does a person carrying a weight upon his back stoop forward?

Why can a person safely skate rapidly over thin ice that would not support his weight if he moved slowly?

The Week's Wild Life in Pictures.

(See next page.)

THE gean (*Prunus avium*) (1) and the wild cherry (*Cerasus vulgaris*) are both fairly common trees in British woods and hedgerows. They vary in height and habit according to the soil and situation they are in. We have seen the wild cherry 60 feet high, with a trunk a foot in diameter. When the trees are in flower in April they add a decided charm to the country-side. The cultivated cherries, of which there are over a hundred varieties, have all been derived from these two plants, the morellos, dukes, and Kentish sorts from the wild cherry, and the hearts and bigarreus from the gean. The fruits of the wild cherry, "merries," are greedily eaten by birds, and thus the tree is apt to become so abundantly distributed as to be a nuisance. At the same time, it is one of our best hedgerow trees. It grows to about full size in 50 years.

2.—Conspicuous by its saw-edged crest on back and tail, the large crested newt is one of our most noticeable amphibians. It now takes to the water for courtship and spawning, the jelly-like eggs being wrapped singly by the female in leaves of water plants. Newt tadpoles have external gills, unlike those of frogs and toads.

3.—The life of the lapwing, or green plover, is an anxious one at this time of year. While his mate sits on her dark, mottled-olive eggs, it is his business to drive off predatory birds, and to beguile away by his frantic gestures and outcries, any intruders who are too strong to be got rid of by downright attacks.

4.—The early tooth-striped moth is fairly common in most of our birch woods, but it is rather hard to find, as its colour—pale grey—harmonises so well with its very common resting place, the trunk of the silver birch, as shown in the photograph. It is easily disturbed during the day-time, when it takes wing to another tree.

5.—This mollusc, the keeled shell, is local, and not very abundant where it does occur. It inhabits ponds and sluggish streams in many parts of Great Britain. It differs from its more common neighbour, Planorbis complanatus, by being keeled in or near the centre of the whorl, whereas the common one has, as its name implies, a flat side to its whorl. The snail lays from ten to a dozen eggs in roundish capsules during the months of May, June, and July, the fry being hatched in about twelve days.

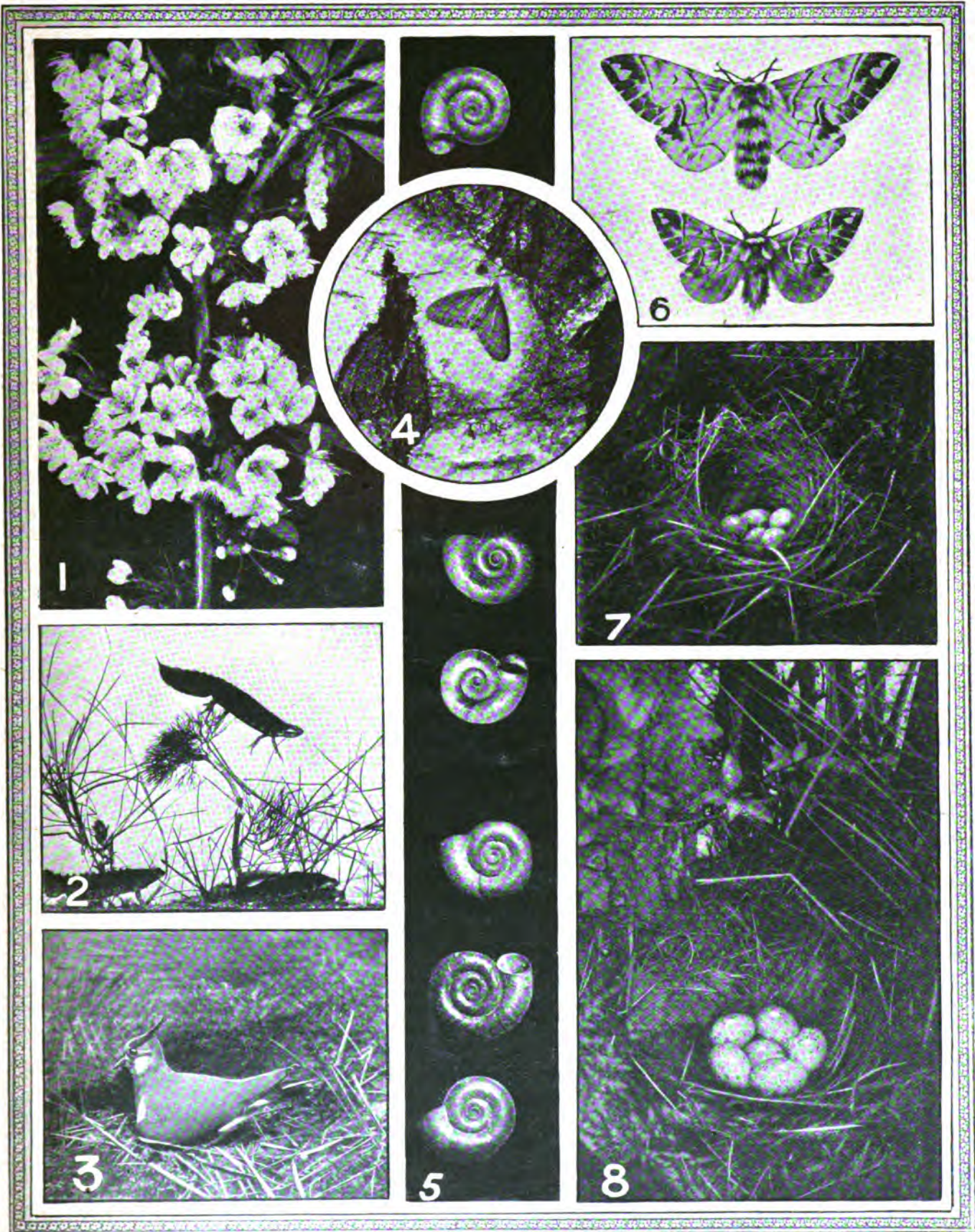
6.—In our issue of March 30th, we published in the Week's Wild Life a photograph of a female Kentish glory at rest on a birch twig. Here are photographs of the male and female, showing the wing markings. The male is quite a different creature from his portly spouse, little more than half her size, and more brightly coloured, darker brown, with almost orange under wings, he dashes about in the sunshine in search of a mate, the sun on his underwings making him quite a conspicuous object, but should the sun go in, he comes to rest at once, generally on the underside of a birch twig, which he hugs to his breast with all his legs and great tenacity.

7.—The linnets home is like the birds that build it, simple and unpretentious—a little cup-shaped structure placed in a bush, and containing bluish-white eggs spotted with red. Several of these nests may be found near together, for the linnets is a harmless, sociable little bird, and even in the breeding season does not display the jealousy common to so many species.

8.—The moorhen's rather untidy-looking nest may be found as early as March, and may contain as many as nine eggs; the dark spots show up as well in the photograph as in Nature. The nest is not always as low down as in the picture, but may be placed in a bush or on a bough of a tree.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 318.)



1. The Gean, *Prunus avium* (E. Connold). 2. The Large-crested Newt, *Triton cristatus* (S. and W. Johnson). 3. Green Plover or Lapwing, *Vanellus cristatus*, on nest (T. A. Metcalfe). 4. Early tooth striped Moth, *Lobophora lobulata* (A. E. Tonge). 5. The Keeled Shell, *Planorbi carinatus* (J. C. Varty Smith). 6. Kentish Glory Moth, female and male, *Endromis versicolor* (A. E. Tonge). 7. Nest of Linnet, *Linota cannabina* (Miss O. Morrill). 8. Nest of Moorhen, *Gallinula chloropus* (W. Hanson).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, APRIL 13, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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All natural history and literary correspondence to be addressed to the Editor, and all business communications to the Manager, THE COUNTRY-SIDE, 2 and 4, TUDOR STREET, LONDON, E.C.

Sea Shore Hunting.

By ALBERT H. WATERS, B.A.

Late Editor of the "Naturalists' Chronicle."

NO very expensive apparatus is needed for shore naturalising—one of the most fascinating occupations of the Nature-lover. A bag to carry the tins, jars, bottles, and tubes into which the specimens are to be put, and a hand-lens for their examination are the essentials.

The tins and bottles should be square in form, so that they may pack closer. Plasmon cocoa-tins are very handy for seaweeds of small size and for crabs, also such bottles as sweets are sold in will be found excellent for the work. They are generally fitted with stoppers tight enough to keep the water in, and I do not find the living things suffer, even after a fifty-mile journey. But for anything such as small fish, to whom air is essential, a short glass tube may be thrust through a perforated cork, or one of the smallest-sized flower-pots may be dropped into the mouth of the jar. If a piece of string be wound round the flower-pot it will fit tightly in the mouth of the jar, and there will be no fear of the water shaking out, while the hole at the bottom of the little flower-pot will let in as much air as the fish will want.

For small shells, such as the little *rissoa*, which may be shaken out of the tufts of seaweed torn up by the agitation of a gale and cast on the beach, penny gum-bottles are very handy, as are the tubes in which photographic tabloids are sold, and these last will be found the very thing if something special be detected, and it is wise to isolate it.

Of course the paraphernalia one takes will depend on the particular department of marine biology he is most interested in. The conchologist will find the daily paper, when he has read it, come in handy for examining what can be shaken out of the heaps of seaweeds which lie above high-water mark. A square of the smallest gauge of perforated zinc will be found very useful for sifting the fine sand away from the *rissoa* and hydrobia shells, which may then be readily picked out and roughly determined by the aid of a pocket lens. Any sort of small box—a wooden pill-box or a tack-tin—will do to pack them away in.

If living specimens be wanted the wet seaweed freshly thrown up after a rough night must be examined, and all stones and oyster-shells cast up from the sea bottom with the oar-weeds growing on them closely scrutinised. You never can tell what you may not find among the branched "roots" of such oar-weeds as the saccharine laminaria. Pull them off the stone carefully, and perchance your eyes may be gladdened with a sight of the pretty blue limpet, *Patella cærulea*, and maybe its handsome translucent brother the porcelain limpet (*Patella pelucida*), whose shell looks almost as if formed of glass.

And if you come across the globular "root" of the bulbous oar-weed (*Laminaria bulbosa*) be sure and cut it open before throwing it away. If fresh out of the waves or fished out of a rock-pool it will yield a harvest of marine treasures. A crowded *Æolis* or some other naked-gilled sea slug may be hiding away,

or, if it be the right season, the egg-ribbon of Johnston's Doris may be found.

If the curious coat of mail-shells which roll themselves up be wanted they are best searched for under stones. Although they stick tightly it is not necessary to burden yourself with a small boulder; deft fingers can soon learn the trick of sliding them off. You must be careful, however, what sort of bottle you put them in, or you may not be able to get them out again when they have unrolled and crawled on to the glass.

After a strong gale one can get almost as much information about the life of the deep sea as if he had been to the expense of a dredge. It only needs to know how to use one's eyes and how to look for things which hide up and, alarmed at their new surroundings, often take great pains to conceal themselves.

If one's fancy is the study of sea-worms these stones and shells to which the oar-weeds are anchored will well repay diligent search, although species may not be made out until evening in the quiet study, when the aid of the microscope gives opportunity for more minute examination than is possible on the beach with a simple hand-lens.

To one who is new to this study the sight of the serpulæ putting out their bright-hued or daintily-marked gill-fans will afford exquisite pleasure. When picked up at first they are but white markings in relief on the stone, much as if mermaids had been trying to write a sort of Arabic. But from the end of what proves to be a calcareous tube comes out the resemblance of a tiny composite flower, which thrusts aside a conical plug, which tightly closes the orifice when the gill-fans that mimic the rays of the composite flower are withdrawn into the shelter of the tube.

Larger and finer, more contorted tubes may also be sometimes found cast up by the breakers after a gale, especially if these tubes of the twisted serpula are so old that the seaweeds on the stone or shell are of considerable size.

It is in the pools left by the falling tide that most success may be expected. There more living creatures will be found. If you attentively watch you may see many things you would overlook at a cursory glance. What at first looked like a dead top shell moves gently, and then runs rapidly away. It contains a hermit crab of just the right size for a small marine aquarium. Or you may see slowly disclose itself what looks like a daisy flower, or it may be like a mass of raspberry jelly badly turned out of a mould. In either case it is a sea-anemone and worth bottling.

These brief hints are intended for those who are new to the study of marine biology, especially for such as live inland and perhaps can only get a week-end at the coast now and again. Complaints are often made by those who have been moved to enthusiasm by the eloquent descriptions of marine life in works of the Gosse type that the reality has not come within miles of their expectations. So far from the seashore proving a fruitful field of marvels it has been as barren as a Sahara in the height of a hot summer. The reason of the failure is that the enthusiastic but inexperienced tyro in marine biology does not know where and how to look for his specimens.

For one thing, he must forestall the gulls and the shore birds who are adepts at the work of ferreting out everything living. And to them the rarest and—to the marine biologist—most valuable creature is but an item in their semi-daily meal.

And these said birds seem more abundant than they used to be in the days where there were no Wild Birds Preservation Acts. Whether the crowd of hungry gulls which is to be seen now following the receding tide is of benefit to the marine biologist is a question. They leave the beach strewn with the empty tubes of the beautiful sabellæ, and make rare molluscs and crustacea still rarer. No doubt they add to the beauty of the shoreland scene, and few except the enthusiastic marine biologist will grudge them the toll they take of the living treasures of the deep; and to such the best advice is to forestall them.

One great charm of seashore naturalising is its extensive variety. Not only is there occupation for the zoologist, the ornithologist, the ichthyologist, the conchologist, the microscopist, and the botanist, but even the entomologist finds work to do in looking after certain coleoptera whose habitat is close to high-water mark, and there are even some like the two species of *æpus* which dwell under stones which the tide covers, and are also reputed to exist below low-water mark.

Although perhaps not relatively numerous, there are more of these seashore beetles than the uninformed would suspect; but to treat of them fully would make a special article of some length.

Livestock for Profit and Pleasure.

POULTRY.

By Chanticleer.

The Buff Orpington.

DURING recent years there has been a great demand for buff-plumaged fowls, and this lovely shade of colour is now seen in many breeds; including the Plymouth rock, wyandotte, and leghorn, but it is very doubtful if either will obtain the popularity now so firmly secured by the buff orpington, which is appreciated in exhibition and utility poultry circles; in fact, I know of no better breed to satisfy the requirements of both, and if any doubt is expressed, we only have to look to the Utility Club's sixteen-week laying competition (being held under test conditions) for proof of this assertion, and it will be found that of all breeds competing for the prizes offered for best winter layers, the buff orpington heads the list. In fact, experienced poultry breeders declare it to be the utility fowl *par excellence*, as it not only fills the egg basket with large, rich, brown eggs in the winter months, but, when wanted for killing, has a good, plump body with plenty of meat on the breast and shoulders, whilst its flesh-coloured legs and white skin make this class of fowl very marketable.

In the show arena it is always in demand, and at all exhibitions, winter and summer, the well-filled classes of valuable birds testify to the attention paid to the breed by poultry fanciers. A good strain of sound-coloured, typical buff orpingtons form a most valuable asset on a poultry farm, for there is always a good sale for winning birds, which change hands at prices varying from 20s. to £50.

To the uninitiated, the breeding of a whole-coloured variety may appear a simple matter, but the poultry breeder who takes to buff's under this impression will not be long in discovering how fallacious is the idea.

Its Origin.

In writing of the origin or "manufacture" of the buff orpington, I know I am treading on somewhat delicate ground, for many poultry keepers positively assert that they are only improved Lincolnshire buff's.

However, I shall not attempt to enter into such an argument now the breed is so firmly established, but give it as my opinion that the late Mr. William Cook, of St. Mary Cray, Kent, who originated the black orpington, obtained the buff, mating together large, gold-spangled Hamburg cocks with coloured Dorking hens, which sensible union produced reddish-brown-plumaged birds, the females from which he mated up carefully to well-selected buff cochin cocks.

Some six years' experimental breeding

produced a typical buff orpington, the first specimen, I believe, being exhibited at the Dairy Show, Islington, in 1894, since which date they have rapidly increased in favour. For the first few years, until the proper type had been fixed, feather-legged, long-backed, moderate-coloured birds were seen, but, thanks to fanciers' and breeders' indomitable energies, much of this has been eliminated.

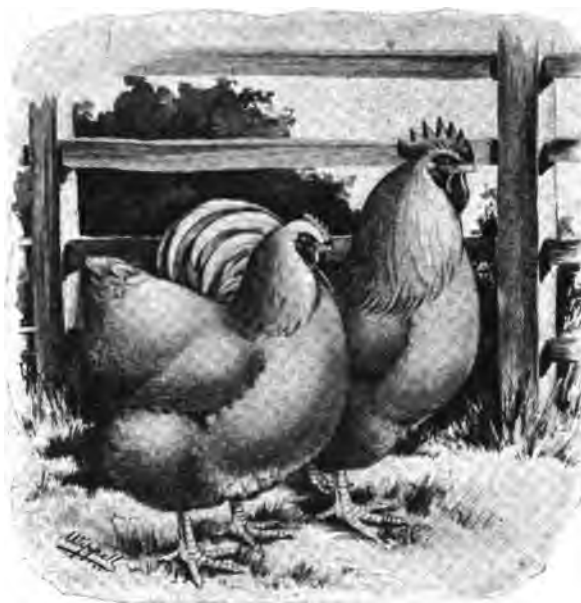
Correct Shade of Colour.

In order to breed typical buff orpingtons, we have to carefully consider the correct shade of colour, and here there is a difference of opinion, and even the club standard of excellence does not definitely fix it, allowing "any shade of buff, from

General Characteristics.

It will be seen from the accompanying drawing that buff orpingtons excel in size and shape, inasmuch as the cock has a broad, deep, full breast carried well forward, with a short back and broad shoulders, whilst the hen is similar, except that she has a small cushion, giving the back a short but graceful appearance. The legs and shanks are short, the toes being well spread. The general shape may be summed up as cobby and compact, erect and graceful. The weight of cocks when fully matured is between 9 and 10 pounds, the hens being about a pound less, so that this fowl can safely be termed a massive breed.

In conclusion, let me add that the buff orpington is suitable for confinement or liberty, and will succeed in moderate-sized runs equally to verdant pastures. To the agriculturist they are excellent, and can always be kept at a profit, being an exceptionally marketable fowl which will contrast most favourably with the non-descript fowls so often seen on farms. When kept in confined runs, I advise good scratching accommodation being given, so as to prevent them getting over fat, to which, like most sitting varieties, they are inclined, but, with exercise, no trouble will be experienced in this respect.



Buff Orpingtons.

A profitable fowl for town or country.

lemon-buff to rich buff, on the one side avoiding washiness, and on the other side a reddish tinge. The colour to be perfectly uniform throughout, allowing for the greater lustre on the hackle and saddle feathers, and on the wing bow in the case of the cock only."

Notwithstanding every care in mating, and the possession of best possible strain, it is difficult to avoid patchiness and mottling, which even the elements will cause if sufficient shade is not allowed this breed, rain and sun spoiling the plumage for exhibition purposes, although the buff orpington (if hatched in March or April) will always fill the egg-basket plentifully, no matter what defects of plumage it may display.

Every care should be taken to select for breeding sound coloured birds, whose feathers are buff to the skin, avoiding any whose undercolour is white, or those which show black or white in the hackles, wings, or tail; also birds with slightly feathered or fluffy shanks.

DOGS.

SHOWS are coming on thick and fast, and the members' exhibition of the L.K.A., to be held on the 9th, promises great things to the ladies who support it. It will be held in the Horticultural Hall, Westminster. The Great Dane and Borzois Club Show, at the Crystal Palace,

takes place on the 25th; the Norwich, where the King's dogs are always to be seen, on the 11th.

In answer to an enquirer, one of the best kennels of Cocker spaniels is that of Mr. R. de C. Peele, the owner of Champion Bob Bowdler, Champion Ben Bowdler, and Tom Bowdler, a team whose records are full of honour and glory.

The Miniature Bulldog Club has obtained the consent of the Kennel Club to their rule to disqualify bat ears, so now we shall have little difficulty in knowing what is a French bulldog and what a miniature bulldog.

The latest worry in dog matters is in the use of abbreviations that shall show colours in pedigrees of dogs, and the Great Dane folk are busy supplying a code. So far the only useful suggestion comes from the *Kennel News* Editor, who sensibly suggests that the initial letters of the colours form the best code, as, for instance, B for brindle, F for

(Continued on page 322.)

Dogs.

(Continued from page 321.)

fawn, H for harlequin, W for white, Bl for black, and Bu. for blue. There is no doubt the Kennel Club should be furnished with full particulars of the colour or colours of each dog registered, especially in those dogs where colour and markings mark value. We learn that Mr. Stoenema will judge Great Danes on April 25th.

In the spring of each year dogs require a tonic and strengthening food just as much as we ourselves do. It is advisable to give each dog some finely-minced raw meat, from 2 to 6 oz. each day, according to his size and breed; for instance, a pomeranian should have about 2 oz. daily, and a collie 6 oz. A little sulphate of iron might be placed in their drinking water. Nature is always trying to renew herself in spring, whether in humans, dogs, or vegetation, and if we bear this in mind, we shall not wonder why our pet dog or cat is listless and worn out. A little Parrish's food is very useful to listless dogs, who can easily be coaxed to take the syrup.

CATS.

THE proper housing of valuable Persian cats is one of the most essential subjects for a novice to consider, and one requiring both careful thought and attention. There is no doubt that of all domestic animals the cat is the most difficult to keep healthy and happy in the unnatural condition of total or partial confinement.

Belonging to the ferae, its original and savage nature still shows glimpses, not wholly tamed, in its independence of character and its love of roaming. Then, again, its civilised side betrays a keen appreciation of the comforts to be found in its home life.

The household pet that enjoys its freedom to go in and out at pleasure, to climb trees, and anon to lie purring its contentment on the hearthrug is a creature that seldom, if ever, ails anything.

But, alas! those fanciers who keep cattery cats can tell another tale. There is an old saying that a cat has nine lives, but truly, the complaints to which our pedigree Persians are subject are more in number than the lives with which they are accredited.

To establish a cattery, therefore, that shall be a pleasure and a pride to the owner, and not a source of worry and grief, caused by perpetual illness amongst the inmates, it is very necessary at the outset to study the chief needs of cat nature.

First, let the cattery have a bright aspect, with as much sunshine as possible. Cats and kittens are sun worshippers, and truly sunshine is the life of growing things and the greatest destroyer of disease germs. It is easy enough in the heat of summer to provide temporary shelters.

If space is no object, then have a good-sized wired-in run, with every inducement for plenty of exercise, such as well-branched dead trees sunk in the ground, some posts, shelves, and benches.

The sleeping house should be well raised from the earth, and have a cosy box or basket filled with straw or hay, wherein puss may make her nest at night. It is well to have some grass in the run, for this is the natural medicine for cats, and goes a long way to keep them in health.

It is advisable, if possible, to select a spot for a cattery not too far from the house. It saves trouble, and is more convenient, especially in wet weather. Cats are lovers of com-

pany; they also like to observe and see all that passes to and fro, to exchange greetings with the gardener, the maids, and the tradespeople coming to the door, and thus to have some outside interest in life.

Cats become dull and stupid if shut out of sight in some backyard. Cats that live in out-of-door catteries, despite the somewhat unnatural existence, are yet much healthier than those who live in heated rooms, where even with every care and attention the atmosphere cannot always be pure and sweet.

It is quite certain that Persian cats and kittens born and bred in outside houses always have much longer and thicker coats. It is the damp of our English climate in the winter that tries all animals, and in constructing the sleeping house care must be taken to have the floor raised and the roof water-proof.

Needless to say, the cattery should be kept scrupulously clean and sweet. Avoid using strong disinfectants, the smell of which cats abhor, and do not elect to start a cattery unless you yourself intend to bestow both time and trouble upon it and its inmates. To be a cat fancier it requires also to be a cat lover.

CAGE BIRDS.

Timely Canary Notes.

BY the time these notes appear, the greater number of canaries kept for breeding will, or should be, mated, and, provided the birds were in a good healthy condition at the time, many of them will be well forward with their nesting arrangements. Still, there will doubtless be many backward specimens, and it is these that will now require some special treatment. In some cases—where the birds seem in good general health, and are in a good plump condition of body, without any excess of fat—only a little bracing up may be needed. As a preliminary to treatment, give 15 drops of syrup of buckthorn in each ounce of drinking water for one day, and follow this up with 30 drop doses of chemical food every alternate day for a week or fortnight. In addition to this, give the hen a pinch of niga seed and a small dandelion leaf on alternate days, and the cocks a leaf of dandelion daily and a small teaspoonful of egg-food every second day. If mealworms are available one may be offered daily to each of these backward birds—the head should be crushed and the worm fixed to the end of a perch. Some canaries will not touch them when first offered but when partaken of they are a most excellent pick-me-up. A course of this treatment will work wonders with backward birds in a short time.

When out of Condition.

In many cases, however, their backwardness is due to the birds being out of health, or down in condition. When any real illness is the cause, of course, only treatment suited to the particular case is of use, and meantime the bird must be quite discarded for breeding. When no actual disease exists, two great causes will be found to cover a large proportion of cases. In the one case the birds are probably in a weakened, half-starved condition, with prominent, sharp breastbones. Treatment is fairly obvious. Begin with a dose of Epsom salts in the water for one day. Give a staple diet of canary seed with a few grains of hemp and linseed, and green food daily, and on alternate days give a little egg-food and a

teaspoonful of scalded rape seed. The other cause is the reverse of this—an unduly fat and overfed condition. These birds should be given plenty of space for exercise, a spare diet, plenty of green food, and a dose of Epsom salts in the water three or four days a week. The diet should be restricted to canary seed and greenstuff, and in bad cases the seed may with advantage be removed for two or three hours each day until the birds are reduced to a reasonable condition.

How to Mate.

When the birds are ready the mere act of putting each pair together does not necessarily form a proper, or even the correct, form of mating. Under such circumstances, a cock that is decidedly stronger and more vigorous than the hen he is placed with will often treat her badly until his excitement has worn off a little, and *vice versa*. Assuming one has proper double breeding cages, such as we described a few weeks ago, the pair of birds should be placed one in each compartment, with the wire slide to separate them. Keep them thus for a day or two, meantime supplying the cock with a little egg food or greenstuff daily, and when he seems to be frequently calling the hen to the wires in the partition and feeding her with these dainties, then the slide may be withdrawn, and the birds given access to each other. Do not worry if there appears to be "a fearful row" soon afterwards; nothing serious is likely to result, and these domestic squabbles, if such indeed they are, will soon be arranged to their mutual satisfaction. A few days later, if the hen is seen toying with her plumage, a nest-box and material for forming a nest should be supplied. When a double breeding-cage is not available then the cock, and not the hen, should be placed in a small open wire cage, and hung on the front of the cage containing his prospective partner, which should also be the cage in which they are to be kept for breeding, until he becomes "chummy" with her, as just described, when he may be turned into the larger cage with the hen, to set about housekeeping.

A Famous Jackdaw.—Several northern newspapers have published sympathetic obituary notices of the famous jackdaw of Creetown. The following is one:—"Death of 'Mattha.'—The famous talking jackdaw has just passed away. 'Mattha,' as he was called, from the fact that that was the first word he learned to speak, has been quite an institution here for a number of years, and his quaint remarks have been a source of much amusement to Creetonians and visitors alike, with whom he was a great favourite. He attended school regularly, accompanying the little boy whom he made his chief companion, and on whose head he was invariably perched, and it is recorded that on one occasion he rather startled H.M. Inspector by a remark he made. He attended all football matches, where he could be seen perched on the goalposts, exhorting the players by crying 'Play up.' Indeed, all gatherings seemed to attract him, and he regularly attended funerals. He seemed to realise that these were not ordinary gatherings, and rarely spoke, while his demeanour at the graveside was distinctly sympathetic. Many are the stories now told about the quaint remarks of the bird. He will be much missed by the inhabitants, and by many visitors, who were deeply interested in him. Several eminent writers have contributed articles to numerous papers relative to 'Mattha's' abilities, but none can appreciate his qualities like those who have been in close touch with him for several years, and to whom his death has caused much regret." The bird, it may be added, was a wild one, which had been kindly treated by a boy named Matthew. From its early attempts to pronounce its benefactor's name, it became generally known as "Mattha."

**If you want to buy or sell
Poultry, Dogs, Cats, Birds,
etc., try our Sale & Exchange.
See Back Cover.**

The Garden.

Work for the Week.

In the Greenhouse.

COOLER quarters should be found for such plants as fuchsias, pelargoniums, and abutilons intended for bedding-out, which are now in a warm house. The shade and drip from growing vines, peaches, etc., will be harmful to them, and, besides, they will be seriously in the way. After moving, they will require shading for the first few days.

Cacti.

Plants which do not thrive should be re-potted, but those that appear comfortable and likely to flower, had better not be disturbed. Above all, do not over-pot. Remove nearly all the soil from the plants, and pot moderately firmly in a compost of rather more than half fibrous loam, the remainder being made up of sand and broken up lime rubbish in equal quantities. The potting soil must be used in rather a dry state. As good drainage is most important, fill the pots one-third with carefully-placed crocks, and over this put some of the roughest of the soil. With the exception of syringing in fine weather, do not give water for a few days after potting.

The belief that cacti should rarely be given any water is, however, erroneous. Generally, it is best to keep them growing through the summer by full exposure to sunshine, and affording a regular supply of water.

Sub-Tropical Bedding.

Although this style of gardening has its detractors, we commend it to those who make a feature of bedding-out, and who would welcome a change from the more ordinary effects. Where the position is a sheltered one, use may be made of such ornamental, large-leaved tropical plants as palms and caladiums, but it is more likely that only plants of less value, and that are quickly raised from seeds will be employed. Castor-oil, tobacco, solanums, variegated maize, etc., should be immediately sown for this purpose. They are to be grown in brisk heat, then gradually hardened off for planting out about the second week in June.

Begonias as Bedding Plants.

For richness of effect, nothing excels a good bed of tuberous-rooted begonias. Planted out in June, in rich soil, they will continue flowering until mid-October, and the tubers are then a valuable asset. It is too late to furnish a bed by seed-sowing, but one-year-old tubers which have started into growth are easily procurable in small pots, and they will speedily grow on into splendid plants.

Cyclamen.

Corms which have finished flowering are to be given a diminished supply of water

until the foliage dies off. The pots may then be laid on their sides in a cool place until August, when the corms should be re-started into growth. It is not profitable to keep them after the third season.

Staking Bulbs.

Hyacinths, and tall-growing tulips require to be staked and tied, and this work must be neatly performed. Stakes that have been painted green are best, and when these are used the raffia should be dyed green to harmonise.

Transplanting Evergreens.

It is not yet too late to move such plants as hollies, euonymus, and conifers; in fact, April and May are the best months in which to transplant them. Do this with every care. Water thoroughly immediately after planting, and, in the case of large specimens, in dry



Photo.]

Catasetum Bungeorothi.

A very attractive orchid discovered in Venezuela about twenty years ago.

Spring Gardening.

If summer has its glories, the skilful gardener makes of his garden a veritable paradise in the spring. In many gardens, however, there will be, as yet, but little to be seen. Where this is the case, we suggest that a little time spent in visiting public and private gardens of repute would be valuable in affording hints for the beautifying of the home garden next spring.

The Fruit Garden.

Peaches, nectarines, and apricots will require attention in the matter of disbudding, and apples and other trees grafted last spring must have all the shoots springing from the stocks rubbed off as soon as they appear.

Potatoes.

The earliest of these are well worth the expenditure of a little trouble in the giving of protection. As the tops appear above the soil, cover them lightly over with fine earth, and repeat this operation until they are several inches deep. A plank set on edge along the east side of a row is often sufficient to save potatoes and other tender plants from damage, even in a severe frost.
G. T.

A Sensitive Orchid.

DARWIN, in his work on the "Fertilisation of Orchids," devotes a chapter to the genus *Catasetum*, in which the special contrivances for bringing about pollination are more remarkable than in any other plants.

One of the largest-flowered of the many species known is represented in the figure. It was discovered in Venezuela about twenty years ago by an orchid collector named Bungeorothi, and was named after him. The first plant of it that flowered in England was sold in Stevens's auction rooms, Covent Garden, for 50 guineas. Very strong plants have produced spikes of 16 flowers, and, as each flower is about four inches across, and coloured creamy-white with an orange throat, its attractiveness will be admitted.

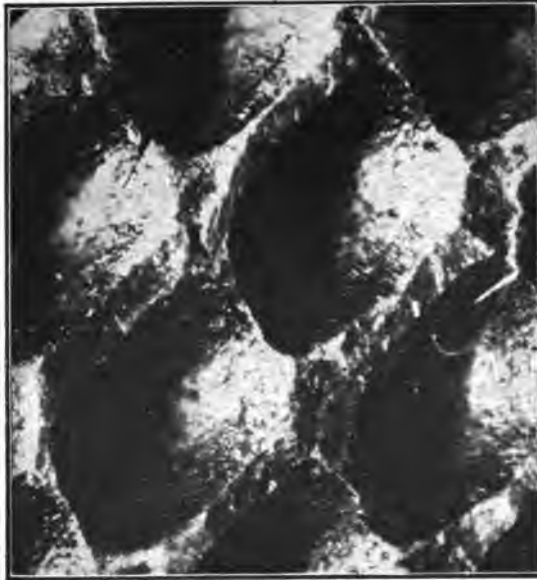
The cavity at the base of the labellum of the flower, in which the nectar lies and acts as a bait to insects, is guarded at the mouth by a pair of antennæ-like filaments, which act as though they were sensitive, for the slightest touch causes the pollen shaft to spring forth and attach itself at once to the intruder by means of a disc coated with viscid matter, which quickly sets hard.

Should the intruder be an insect, it carries the whole of the pollen shaft to the next flower, where the pollen is brought in contact with the stigmatic surface, and fertilisation is thereby accomplished.

Another remarkable peculiarity in this genus is the separation of the sexes, each plant being either a male or a female, though now and then a plant occurs which bears both male and female flowers. All the *Catasetums* have flowers of strange, even grotesque, structure. There is a good collection of them at Kew, where one or more may often be seen in bloom.

W. W.

What is it?—Result of March 23rd.



Enlarged photograph of part of the side of a thimble. \times be at once evident.

IN our issue of March 23rd we published this photograph, and offered a prize of £1 for the correct solution. It represents part of the side of a thimble magnified, and no fewer than 49 competitors were successful in giving this correct solution. We have therefore divided the prize, and shall send to each the sum of fivepence. We regret that the prize will be so small in each case, but trust the successful competitors may obtain larger prizes in future contests. In addition to the 49 mentioned, a large number of competitors declared that the What Is It? was part of a thimble, but they either left it indefinite as to what part it was, or wrongly stated it to be the top. This makes all the difference in the world, for a photograph of the top of a thimble magnified is very different from the side. Then there were scores of readers who thought the What Is It? represented a sponge. Sponge, by the way, seems to be a favourite solution with competitors, for there has not been a single What Is It? given in the COUNTRY-SIDE that has not been declared a sponge by a large number of readers. Among other interesting and popular solutions were lady's spotted veil, huckaback towel, quilt, pumice-stone, top of a nail, nutmeg grater, string bag, pulp of orange, honeycomb, rough surface of a file, kitchen strainer or sieve, side of metal matchbox, lace curtain, d'oyly, carpet. Each of these solutions was selected by a considerable number of readers, and it must be agreed that the photo bore some sort of resemblance to the objects named. By comparison with the photograph of a thimble, however, the true solution will



The thimble photographed. \times

How to Study Nature at Home.

TO a lover of Nature no picture can possibly compare with a stereograph; and to be able to have in one's possession a collection of stereographs of the wild life of one's own country is almost as good as to be able to ramble day after day amid fields and hedgerows studying Nature at first hand.

The COUNTRY-SIDE stereographs portray various phases and features of British wild life. They cover the various fields of Nature study, and even as ordinary photographs would surpass what has hitherto been done.

But as stereographs they are perfect; and experts have described them as among the most wonderful triumphs of the Nature photographer's art. Seen through the stereoscope they give you not mere pictures of nests and birds and trees, but the nests and birds and trees themselves.

They were taken by a keen and clever naturalist, who sometimes travelled hundreds of miles, and spent days, and even weeks, to obtain a single stereograph.

An interesting description of the objects depicted, written by Mr. E. Kay Robinson, Editor of the COUNTRY-SIDE, is printed on the back of each photograph.

Such views can be obtained nowhere else, and yet, although they are unique, the COUNTRY-SIDE is offering them at a rate which is within the reach of all.

There are forty subjects, a list of which is given on this page, and we are offering them to readers at the rate of threepence each post free.

Below is a reduced reproduction of one of the views, and the description on the back of the stereograph.

Address Stereoscope Department,

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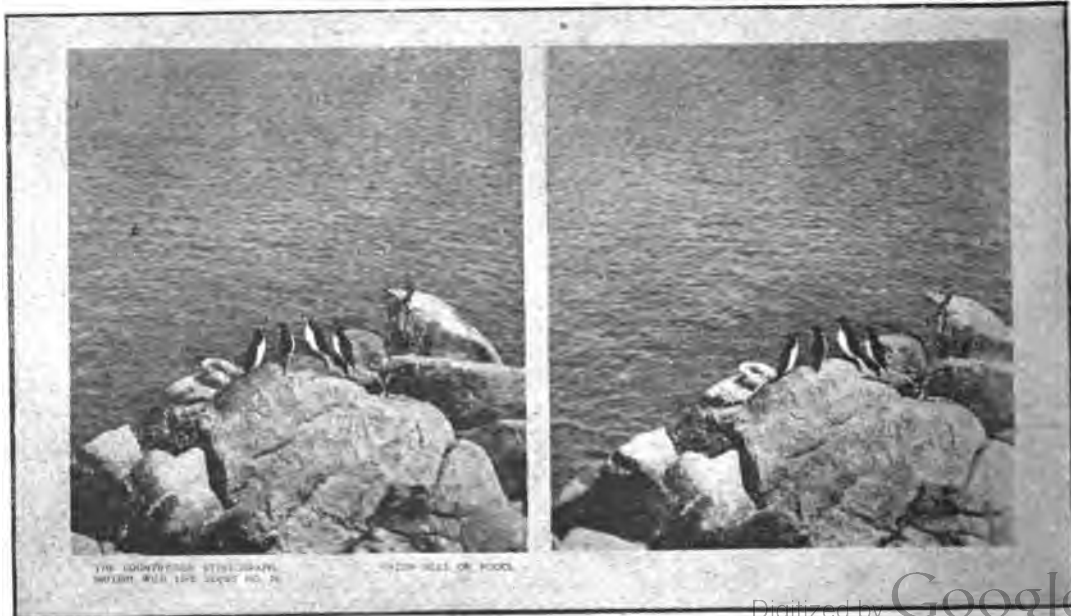
British Wild Life Stereographs

3d. each, post free.

- 1, Carrion Crow's Nest; 2, Puffin Found at Home;
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- 9, Nest of Chaffinch; 10, Young Thrushes; 11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs; 13, Grass or Ring Snake; 14, Nest of Lapwing; 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush; 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest; 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat; 21, Manx Shearwater's Nesting Burrow and Egg; 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg; 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg; 26, Common Tern, Egg, Young, and Shell; 27, Young Ring Plovers; 28, Ring Plover's Nest and Eggs; 29, Shag on Rock; 30, Shag's Nest and Eggs; 31, Nest of Long-tailed Tit; 32, Young Moles; 33, Nest and Eggs of Robin; 34, Young Kestrel; 35, Nest and Eggs of Moorhen; 36, Eggs of Nightjar or Goatsucker; 37, Nest of Wild Duck; 38, Nestlings of the Jay; 39, Nest and Eggs of Willow Warbler; 40, Nest of Red-legged Partridge.

RAZOR BILLS.

The Razor-bill (*Alca torda*) is the nearest relative to the Great Auk, now unhappily extinct, and, like that famous fowl, it is especially characterised by its aquiline beak with queer markings and grooves on its surface. In its habits also the Razor-bill closely resembles the lamented Great Auk, although it is so numerous that we need never fear that it will follow its distinguished relative to the realms of the extinct. Nevertheless, it has to a certain extent the same failing which led the Great Auk to disaster—namely, the misplaced confidence with which it will allow human beings to approach often within a few yards before it takes wing or dives. Although its wings are small and narrow it can fly strongly and well, small troops of them travelling long distances often to their feeding places, skimming along just above the surface of the sea in single file. From its nearest living relative, the Guillemot, the Razor-bill is easily distinguished by its high-bridged beak with lines and grooves, whereas the Guillemot's is narrow and pointed, without any ornamentation.



Wild Life Stereograph, No. 24.—Razor Bills on Rocks.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 101. VOL. 4.

APRIL 20, 1907.

1d. WEEKLY.

The Mole at Home.

Some Account of Himself and His Family.

THE mole is a very beautifully coated appearing, and the fore paws and legs are and interesting little animal, generally strengthened for the work across the country, and being curious about the little creature, I caught it and carried it home, where I put it into a tub, in which I had put about 12 inches of garden mould well patted down. I was amazed at the speed with which he buried himself, and at the rate he travelled around that tub under the mould. The strength and digging power of its spade-like paws is simply marvellous.

lands, but I have not yet heard of its being found on the Scilly Islands. Our friends the farmers are not on friendly terms with the moles at any time, but more especially during the reaping season.

In March and April their presence is known by the many little mounds of earth dotted about the grass fields, and unless these are levelled down after the nests are made in April and May, much trouble is caused, for when the reaping begins, the knives of the reapers are often damaged by cutting through these mounds of earth and stones.

If one should be curious enough to peep into the moles' homes, early in May is a good time; some of the mounds may be observed to be much larger than others; if these large mounds are opened, they will be found to contain nests made of coarse grass, etc., outside, but the inside is lined with fine and dry grass, and snugly tucked in this are the young. Some nests contain little bare red skinned babies, others, well-grown youngsters clothed in their beautiful new velvet coats.

Here are two photographs of a nest I found early in May, one is the nest as it appeared when first uncovered, the other of the nest opened, showing three lovely but restless youngsters.

One may here notice the wonderful development of the fore-legs and fore-feet of the little animals, and it shows plainly how Nature helps to develop in living creatures just what is needed most for their preservation.

Here is an animal that has many enemies above ground, and its safety is in burrowing out of sight under the ground, and to do this enormous power has been acquired by the fore-legs and paws. Then again, Nature withdraws that which becomes of no use. Living underground as the mole does in its dark passages sight is useless, and although the mole is not actually blind, its eyes are very small and not easily to be discovered. The useless eyes are dis-



Photo.]

A Promising Family.

[G. W. Pearce

Young Moles in their Nest.



Photo.]

Nest of the Mole.

As it appears when the earth is uncovered

A few years ago a mole ran across a country lane in front of me, and, being curious about the little creature, I caught it and carried it home, where I put it into a tub, in which I had put about 12 inches of garden mould well patted down. I was amazed at the speed with which he buried himself, and at the rate he travelled around that tub under the mould. The strength and digging power of its spade-like paws is simply marvellous.

I had read something of a mole's powers of eating, and knowing he must be hungry, I proceeded to get a lot of good big, fat worms, the weight of which must have been nearly half the weight of the mole, and dropped them one by one on the top of the earth in the tub. Then began a race between some of the worms on the top and the mole underneath. His little red snout would appear exactly under the worm, and both would disappear, and from the noise of teeth grating we knew of the feast going on. Sometimes his nose would appear just behind the worm, when he would go under and try again. It is very wonderful how the sense of smell or hearing, (which is it?) is developed in these animals. I soon tired of trying to satisfy his hunger, and let him go to dig for worms himself.

GEO. W. PEARCE.

One very curious thing about the mole is that his coat, usually of grey velvet, is not always true to this colour; black, pied, orange, and cream-coloured varieties being found at times. Of course, such a wide range of variation, as compared with what occurs in other wild animals, may be accounted for by the fact that the mole's underground life renders it immaterial what colour he is. Yet, this being so, one wonders why there are not more "off-coloured" moles to be seen. There are two possible explanations of this: one that variations are not by any means always inherited; the other that colour is often correlated with constitutional peculiarities, and pale varieties are apt to be lacking in stamina.]

Country-Side Notes.

But most of all it wins my admiration,
To view the structure of this little work,
A bird's nest. Mark it well within, within
out

No tool had he that wrought, no knife to
cut,

No nail to fix, no bodkin to insert,
No glue to join; his little beak was all.
And yet how neatly finished! What nice
hand

With every implement and means of art,
And twenty years' apprenticeship to boot,
Could make me such another?

—HURDIS.

WHEN the nightingale first arrives, sunny noon is the best time to hear him. The nights are scarcely warm enough either for him to enjoy singing or for us to loiter out of doors to listen. But, if you can find a sunny, sheltered nook at midday, where you can sit, with the buzz and glitter of spring all round you, and listen to the russet nightingales challenging each other in rippling music from their several thickets, what more can you want for half an hour of happiness? The nightingale has the reputation of being a shy bird; but if you do not keep moving about you will find that he deliberately comes nearer and nearer to you to sing; but if you happen to have stationed yourself too close to a position which he desires to occupy, he will drop down into the undergrowth and fidget about all round you, uttering his peculiarly harsh croak of protest, like a frog with a bad sore throat. Sometimes, too, he will interrupt himself in the middle of his song to utter this hoarse note, perhaps because you moved, and then go on with his music where he left off. At other times you may see one pursuing another through the bushes, both of them uttering snatches of song as they go. Incidents like these more than compensate for the loss of that background of silence which throws the nightingale's solo into superb relief at night."—From "The Country Day by Day," April 17th.

The question as to the dislike of cats to eating robins brings us face to face with some very interesting scientific problems. There certainly seems to be considerable evidence for the belief that robins are distasteful, though exceptions occur. Of course, the "personal equation" has something to do with this; and another point has to be taken into consideration. An animal will, for a change of food, devour a creature which under normal conditions it would let alone. I have often found the latter to be the case when experimenting with birds and the supposedly unpalatable butterflies of the East. Very few of these were refused absolutely.

It must be remembered that the tame cat does not exist under normal conditions; it has food given to it by us, but this is commonly cooked—sometimes vegetable—so there is a temptation to eat any small bird, even if distasteful, as a change. On the other hand, the fact that many cats, at all events, reject the robin

is strong evidence against its palatability. That they kill it is merely a gratification of their sporting instincts, which they can indulge, as they are fed by their owners. A wild cat, which has to hunt for its prey, would not have time to waste on catching nasty birds for fun; and when it went out hunting, it would probably stalk an appetizing bird, unless too hungry to be able to afford to make a choice.

To get at absolutely conclusive results one would have to feed a cat naturally, on small birds, mice, rabbits, etc., and give it an occasional robin, *along with another bird*. That is the only way really to ascertain an animal's tastes; the opportunity of choice must be present. Owing to this method of investigation being so often neglected by experimenters, results in the study of animal gastronomies are apt to be misleading in too many cases. Of course, I would not suggest that anyone should kill robins for this purpose, but whenever one is killed by a cat, and not eaten by that cat, it might be kept and offered to another in the way above suggested.

It would also be interesting to know if hawks also dislike robins; if they did not, it might be suggested as an explanation of the robin's colouration that the brown, protective colour of the back of this bird was designed to conceal it from aerial foes, while the conspicuous red of the breast was a "warning" colour to terrestrial hunters. But then one would have to remember that there are many robins in other countries not coloured like this, and one would need to know whether they were unpalatable also. At the same time, one may get unpalatable and palatable species in the same group—at any rate, in butterflies; in India I found the two most unpalatable species were a swallow-tail (*Papilio aristolochiae*) and a "white" (*Delias eucharis*), which, though belonging to groups usually edible, were more disliked by birds than the Danaidae, of which one reads so much.

The presence of fleas on a squirrel, found dead in its nest by a correspondent, Mr. Mackrell, and noticed in the April 6th issue of THE COUNTRY-SIDE, was certainly unusual; and, as was pointed out, the only explanation of the fleas not having left the body of the squirrel, which had been dead some time, is that there was no other suitable host at hand to supply them with food and shelter. There was also a note, in proof of the infrequency of the occurrence, on the fleas infesting rabbits, and stating that their habit was to collect on the ears of a departed rabbit-host, preparatory to a speedy departure.

There are, however, one or two interesting and useful points concerning fleas to be found on squirrels and rabbits. You will seldom find a squirrel free from these irritating parasites, which, it is believed, are identical with those so objectionable to

human beings and needing no further description. Suffice it to say that the weaker a squirrel becomes, the more numerous will be its fleas; and as a moribund squirrel loses its strength, its success in freeing itself from its tormentors becomes less—this is why weak or dying creatures generally possess more parasites than the able-bodied and strong.

Curiously enough, another correspondent, a few days after reading of the fleas on the defunct squirrel, found a number of fleas on a dead weasel, though till he stroked its fur the wrong way he saw no sign of them. This weasel had been trapped in the open fields, where for some time at least, its fleas would have difficulty in finding another host, as was no doubt the case with the squirrel parasites. Since fleas are carnivorous, though they much prefer warm living blood and flesh, it is not unreasonable to conclude, in its absence, that they prefer cold dead meat to starvation.

The fleas commonly found on dogs, cats, hedgehogs, and even weasels sometimes, are, to all intents and purposes, of the same variety. But those fleas which may be seen on rabbits and fowls, often literally in hundreds, are not only quite distinct from "common" fleas, but are also different from each other. Fowl fleas (not lice) are quite sluggish in their movements, and are not liable to torment a human being in the usual way; for they don't storm you at sight, and if a few do make a mistake in their flight and crawl upon a human host, they merely tickle slightly while crawling off.

Rabbit fleas appear to vie with their aristocratic cousins, whose hop of life is so high in agility, though, with a commendable abstinence, they never attack a human being, and may, like fowl fleas, be termed "harmless." Their delight is to crowd in a black mass on the ear-tips of a rabbit, probably because the unfortunate bunny cannot scratch those parts, and does not care to rub them against a tree, even if the idea ever enters its head thus to massacre its tormentors.

As in the course of rambles through woods and commons, adders may be unexpectedly met with, a word of advice and warning may be useful, especially to those readers who love always to be accompanied by a dog. When adders are known to exist in certain parts, it will be safer to keep your dog, no matter how obedient it is in keeping to heel, on a lead; but should it be bitten by an adder, the speedy application to the wound of permanganate of potash at full strength will be found an excellent, besides being a most easily obtained remedy.

Old rustics will tell you that should you be so unfortunate as to receive the bite of an adder—and so lucky as to kill it—

you cannot do better by way of first aid than to rip open the reptile, take out the internal fat, and apply it to the part. Years ago, like truffle seekers, men used to hunt up adders for the sake of their fat, out of which they are said to have made considerable profit by selling it to country practitioners.

* * *

It is always pleasant to hear of the viewing of a hoopoe by one who has let it escape unmolested, as in the case recorded this week in our columns. This beautiful bird—taken all round, the most desirable of our rare v. sitans—has bred more than once with us when allowed to live in peace, and might become fairly common if rigorously protected. It may here be mentioned that though the crest is what usually strikes one in the hoopoe when seen stuffed—no taxidermist can resist setting it up with the beautiful cinnamon crown expanded—it is not by any means generally noticeable. It is only erected in life when the bird alights, or is under some emotion—anger, love, or fear. When it is quietly dabbled for insects on the ground, the crest is simply folded; and in flight it does not show at all. What one notices then are the large rounded wings barred with black and white, and the curiously butterfly-like action, with alternate flaps and closures of the wings.

* * *

A recent correspondent draws attention to the difference in habit between the wood-pigeon and domestic pigeon in London. The woodlanders when disturbed take to trees, or, if there are none handy, to the top of a building, while the house-pigeons settle on ledges. This is certainly curious; one can see why the wood-pigeon prefers a tree if one is near, but it is not so easy to see why any part of a building will not suit it if it has to settle there. It may be mentioned that in the London parks the house-pigeon has taken to settling in trees; but it prefers the larger branches, and does not affect the smaller twigs and move about in the tree like the wood-pigeon.

* * *

The domestic bird is, of course, the descendant of the rock-dove, still found wild on our coasts and in many other places abroad; and the feral pigeons of our streets are practically identical with it in form, though often differing in colour. Thus it is easy to see why it generally haunts buildings; yet there must have been a period in its history before it took to rocks, as most pigeons are tree-birds, and no one, to look at the foot of the blue-rock or its tame descendant, would be able to tell from this that it frequented rocks and buildings only as a rule.

* * *

It would be interesting to know whether, in London, the wood-pigeon and house-pigeon have been learning from each other; most probably they have, for birds certainly will adopt each other's habits. I once kept a common drake along with two Muscovy ducks; the latter, being of a perching species, used to fly up and sit on a garden seat, and their companion learned to do this too, though in the ordinary way he certainly would not have thought of it. Mr. J. G.

Millais, in his "Game-birds and Shooting Sketches," also gives an instance of a tame red grouse which learned to perch from his foster-mother, a bantam hen.

* * *

There is a very widespread impression among country people—and many game-keepers share their view—that there are two varieties of weasel—the large and the small. This is not so, though there is considerable excuse for so popular a belief. The idea no doubt exists primarily owing to the great disparity in size between the male and the female weasel.

* * *

A special plea is made on behalf of the magpie, still common in parts, though in many localities the sight of this beautiful bird is quite rare, while in some districts not a single specimen is to be seen for years together. Admittedly an arch pilferer of eggs, surely its striking beauty is sufficient to appeal successfully against its absolute extinction.

* * *

Unfortunately the magpie is easily brought into possession; an indifferent gunner can often hit a flying magpie; its conspicuous nest invites disaster; and eggs or flesh as bait for a trap prove irresistible temptations. We don't ask for swarms, but let us have a sprinkling of magpies to maintain the beauty of the country-side. A special appeal is therefore made to land-owners and others in authority to stay the hands and guns of their keepers before all our magpies go, to live only in history.

* * *

There is a very deadly method of catching kingfishers, which, in the interests of one of the less common attractions of the country-side, it is well to expose. Kingfishers love to perch on a stump or stick or snag projecting a few inches above the water-level to look out for fish; so the trapper, who has probably been stimulated by the promise of a shilling or so to procure specimens for glass-case purposes, fixes stakes in likely parts of stream or pond. The top of each stake is crowned with a gin, which offers a more than ever inviting perch for the luckless birds. A little careful observation during a stroll by the water-side would discover the existence of this deadly practice.

X. Y. Z.

Bird Orisons.

Do you know what people say?
When the birds at break of day
(Robin, linnet, blackbird, thrush)
Wake, and warble in the bush,
"Ah," the pious peasants say,
"That is how the creatures pray!
Not a bird will slake its thirst,
Feed, or fly unless it first
Sends to heaven its daily prayer,
Asking for the good God's care."
That is why, so people say,
Song-birds lilt a matin lay.
This is, too, what they believe.
When the birds at dewy eve
Settle in the shadows brown,
Chanting as the sun goes down,
"Ah," the simple peasants say,
"Birds can praise as well as pray;
Not a bird will seek its nest,
Fold its wings and sink to rest
Till it wafts to heaven above
Thanks for all a good God's love."
That is why, so people say,
Song-birds trill a vesper lay.

A. L. G. FOWLER.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Animals.

NOCTULE BAT out on March 31st, at Clyffe, Dorchester.—(H. Lea.)

SQUIRREL, young out of nest at Clyffe, Dorchester, on March 31st.—(H. Lea.)

Birds Seen, etc.

DARTFORD WARBLER: A pair seen more than once recently at a locality in Dorset.—(D. E. Pye-Smith.) [Exact locality best not mentioned.—Ed.]

Arrival of Migrants.

HOUSE-MARTIN, at Alassio, Italy, on March 27th (E. F. Pye-Smith); seen at Comrie, Perthshire, March 28th (S. Macpherson); at Romsey, Hants, on March 30th, wind S.E., light.—(E. Buckell.)

SAND-MARTIN: Dying specimen found on March 18th, at Wimbleton (E. Murray Morgan); two seen at Tadnoll Mill, Dorset, on March 28th (H. Lea); arrived at Kilkenny, March 29th (unusually early) (M. D. Haviland); arrived at Romsey, Hants, on March 30th, wind S.E., light.—(E. Buckell.)

SWALLOWS at Alassio, Italy, on March 25th (E. F. Pye-Smith); three seen feeding over the river Vrynwy, at Llanymynech, on March 30th; one seen a few miles from Hull on same day (30th) (J. Nelson); two on April 1st (H. E. L. Grundy); three over lake in Sefton Park, Liverpool, on March 31st (W. Brown); several near Bath on April 3rd.—(F. Norris.)

NIGHTINGALE heard on March 31st at Cranleigh (C. Walker); reported to have been heard near Peshurst on March 29th—usually common, but this exceptionally early.—(L. E. H.)

REDSTART at Hazelreigh, Essex, on April 5th; "the earliest date I have ever recorded."—(Rev. G. H. Raynor.)

BLACKCAP: A number of males and females seen on March 29th at Oxford, and others seen and heard singing next day (C. J. Chase); arrived at Studland, Dorset, on March 30th.—(D. E. Pye-Smith.)

WILLOW-WARBLER heard and seen close quarters, unmistakably, on March 15th, at Brigg (Rev. W. G. White); arrived on April 4th at Hendon, Middlesex.—(J. E. N.)

TREE-PIPIIT: Two seen at Rugby on March 31st.—(J. Simonds.)

CUCKOO heard on March 26th, seen on railway telegraph wire on 31st, and again heard next day, at Yate, Glos. (W. H. S.); "reported" to have been heard on March 31st, Clyffe, Dorchester.—(H. Lea.)

WRYNECK arrived at Luyborough, Romsey, Hampshire, on March 28th (J. B. Hillier); heard calling several times on April 2nd, at Wykeham House, Romsey.—(E. Buckell.)

HOPOE, seen on Henbury Golf Club links, Glos., on March 30th. "I got within 20 yards of it . . . the crest was plainly visible when on the ground."—(R. Saxby.)

Marked Birds.

BLACKBIRD, hen, seen (paired), with white head, wing-tips, and tail, on March 30th, near Chingford, in Epping Forest.—(A. Nickolds.)

Early Nests.

TREE-CREEPERS nesting in an open-air shelter at Wokingham on March 31st.—(F. Dudley Warde.)

Reptiles and Amphibians.

ADDER out on April 1st, at Clyffe, Dorchester.—(H. Lea.)

PALMATED NEWTS: Half a dozen captured within 15 miles of London recently.—(A. C. Budd.)

Insects.

HUMMING-BIRD MOTH seen on March 1st at Yate, Glos.—(W. H. S.)

Many records of common BUTTERFLIES, TORTOISESHELL, PEACOCK, BRIMSTONE, SMALL WHITE.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

A Monster Arum.—A curious development has been observed in an arum grown in the gardens of J. Powell, Esq., Hull. The plant, which is twenty years old, is a large flowered variety, several of the spathes measuring 11 inches in length and 6 inches across. In



Photo.] G.F.Foster.

A Monster Arum.

Some of the spathes measure 11 inches in length and 6 inches across.

1903 one of the spathes had a supplementary one at the side, and this year, as will be seen from the photograph, there are two supplementary spathes. Would it be possible, by saving seeds from this particular plant, to develop a race of arums with three-spathed flowers?—G. F. FOSTER.

[This is not an uncommon occurrence in plants of the arum family. The spathe is simply a leaf enfolding the spadix on which the flowers proper are closely clustered. The development of an extra leaf (spathe) or two is due to exceptional vigour. Sometimes the common arum lily (*Richardia*) develops a green leaf in place of the white spathe. In other arums we have seen several spadixes where one should be, and in *Anthurium* there is a sport with numerous spathes springing from all parts of the spadix. This kind of freak among garden plants is due to the unnatural conditions under which they are grown. The characters are not hereditary. You might try to perpetuate the trispathed plant by means of offsets.—W. W.]

Frogs that do not Hibernates.—Usually with the first few mild days in February the majority of the inmates of my vivarium begin to show signs of coming animation. This year, however, on account of the extreme cold they all—with the exception of two—still remained deep within their winter sleep. These particular two belong to some unidentified species of tree-frog from the northern part of America. They are of similar size to the European species, faint yellow in colour, with dark blotches on parts of back and flanks. They occasionally change to a dirty grey tint. I at first took them for specimens of *Hyla versicolor*, but they do not possess the latter's power of quick changes of colour, nor do they ever assume that beautiful silvery hue which is frequently so noticeable in specimens of that species. Their one peculiar trait is that they never show the slightest inclination to hibernate. Although kept under a window which is usually open,

and next to other species that are quite torpid, they never show the smallest sign of wishing to follow suit, but remain as lively almost in the coldest as the warmest weather. In fact, the shrill piping note of the male was heard on several occasions at dawn during January and February. And unless one has kept a number of tree-frogs it is impossible to imagine what a noise these creatures can create when the inclination seizes them. If one starts it is generally the signal for the rest to join in, and if one has about a dozen of these "singing" at one time the effect is not only surprising but to a number of people I expect would be also extremely alarming. These particular two live in a little vivarium all to themselves. Most of the day they spend at the top of their cage sitting on a thick piece of bark. There they squat with their hands tucked under them, looking like two miniature cats on top of a garden wall. During the winter I feed them exclusively on small meal-worms. In the summer smooth-skin caterpillars seem to be their favourite diet, though flies and other small insects are usually eagerly taken. In fact, the key-note of success with all amphibians seems to be change of diet. The more plentiful and varied their diet the better they thrive. Some of my frogs I have had for years. One is already on its fourteenth year. It was nearly full-grown when I first had it. How old, I wonder, is it now? Which raises the query to what age do frogs and toads attain? I should say frogs fifty, toads a hundred.—E. JEFFREY, B.E.N.A.

The Beaver's Double Claw.—Despite the apparent falsity of the popular idea that the appendage in question is employed as a trowel in plastering down the mud of the dams, the fact that the beaver is unique among animals on account of the peculiar spatula-like form of its large scaly tail is probably familiar to most persons. On the other hand, it is much less generally known that the creature has a still more remarkable peculiarity in its external structure—namely, the presence of a complete double claw, a nail, on the second toe of the hind foot. As shown in the accompanying photograph (taken from a specimen in the Natural History Museum), this abnormal structure takes the form of one complete claw placed in advance of another, so that the two together constitute a most efficient scratching or combing instrument. That this double claw is used solely for the purpose of combing and cleansing the fur of its owner seems to be the opinion of all who have written about the life-history of the beaver, and although there does not appear to be any record that the supposition is based upon direct observation, it is probably true. Had it been to assist in digging, the additional claw would have been upon the front instead of the hind feet; while further testimony in regard to its being a combing instrument is afforded by the fact that there

are other rodents whose hind feet are specially modified for this purpose. In South America, for instance, there are certain small burrowing rodents with local names derived from the monotonous noise, like a blacksmith hammering, they make in their subterranean tunnels, which take their technical name of *Ctenomyis* from the fringe of long, stiff bristles on their hind toes, these bristles serving the purpose of a comb in cleansing the fur from the sand and dirt collected while burrowing. More remarkable still is the structure of the hind feet in three genera of North African burrowing rodents, of which the largest known is the Gundi.

In these creatures, as indicated by the names *Ctenodactylus* and *Pectinator* applied to two of the genera, each of the inner pair of toes of the four-toed kind is provided with a horny comb-like structure and a number of stiff bristles, which are employed in dressing the soft fur.

These instances seem to leave little doubt that the double claw on the second hind toe of the beaver is employed for a similar purpose.

It is, however, not a little remarkable that the curious little Arctic burrowing rodents known as the banded lemmings (*Dicrostonyx*, or *Cuniculus torquatus*) present a claw structure almost exactly similar to that of the beaver's specialised hind toe, except that in this instance the peculiarity occurs in the fore foot and includes the two middle toes, each of which has a complete double claw (whence the name *Dicrostonyx*). In place of these double claws being permanent (like the single one of the beaver), they are developed only in winter, when the creature changes its brown summer livery for a dress of snowy white, and are believed to be for the purpose of aiding in the excavation of the winter burrow. If this view be correct, and there is little doubt that it is, we find that, while the double claws of the banded lemming parallel that of the beaver in structure they are developed on the front instead of the hind limb, are temporary in place of permanent, and have a totally different function.—R. LYDEKKER.



Photo.]

The right hind foot of an American Beaver, showing the double second claw.

How to Make an Aeolian Harp.—I should be grateful if some reader will give directions in your valuable little paper for making a very simple Aeolian harp suitable for an elementary school in Italy?—M. MILLARD, Montesia; Citta di Castello, Umbria.

Owl and Rooks.—On the 26th of last month I climbed up to some rooks' nests in a rookery. I discovered a tawny owl sitting on three eggs in an old rooks' nest. On the same branch was a rooks' nest containing eggs on which the bird was sitting. There were also several nests higher up, all tenanted. This is surely an unusual place for an owl to nest, as rooks seem the first birds to mob an owl in daylight.—J. ROWLAND, Lustleigh, Devon.

Cockerei Swimming.—A few days ago I saw a cockerel swimming in the River Wye about a mile below Hereford. A man frightened it, and it thereupon flew about two thirds of the way across the river and then dropped into the water. After waiting about a quarter of a minute it turned round and calmly swam back to the bank it started from, a distance of some thirty yards.—Is this not somewhat unusual?—WALLACE BUNN, Cathedral School, Hereford.

Do Herons Eat Rats?—In reference to your query, "Do herons eat rats?" I shot a heron a few weeks since, and on opening it found a good-sized water-rat inside it. I think the idea that herons live solely on fish a mistake. I have no doubt they eat rats, young moorhens, frogs, toads, or almost anything they can capture and swallow, and I believe, although there is no doubt they are very destructive to fish, that the mischief they do is generally exaggerated. I should require a large grain of salt to be induced to swallow the statements published a short time since in several newspapers as to the quantity of trout found in a heron. I believe a fish of 6 to 8 oz. takes a heron a considerable time to digest, and until that was gone it would not trouble to take more.—E. S. MILLER, Castle Combe, Chippenham.

Collecting Pond Life.—In reading the article on "Goldfish Breeding in Aquaria" by the Rev. G. C. Bateman, which I was very much interested in, he mentioned how to take objectionable matter out of the aquarium by means of a glass tube by holding your finger over the opening. Further down he tells how to collect a supply of crustaceans, etc., with a large bottle, a tin can tied to a long stick, a syphon and funnel covered with muslin. It is in connection with these two appliances I thought I might give your readers a hint on what I consider a superior and much easier way. I may say that I go in a little for the microscope, and study pond life, and the friend that first interested me in these studies had, for lifting these small creatures out of the bottles, a glass tube with a rubber top, the same as for filling a fountain-pen. With this you have a stronger current than with your finger. I found great difficulty in catching, say, a cyclop with the tube without a rubber on the top, as they are such strong swimmers that they could resist the pull when you tried to suck them up, but with the rubber on top the catching them is easy. Another advantage is that when you are going to put them into a live-box you can regulate the flow of water out of the tube better. And for getting a supply from the pond my friend had a net made like this: Procure a piece of smooth wire about 24 inches in length, bend it into the shape of a triangle, next a piece of muslin, and make it up like a

jelly-bag—that is, 24 inches at the top and narrowing down to about five inches; cover your wire with this, then at each corner fasten a piece of tape about a foot long, tie your three ends to a string, fasten a bottle in the narrow end; then you can go out to the pond, fling in your net, hold the other end of the string, then draw it in, lift it out of the water; the water rushes out through the muslin and your catch goes down into the bottle. Repeat this till your water is as thick as you require it.—X.

A Strange Stowaway.—The great importance of bananas which is such a feature of the modern fruit trade results in the arrival here of a good many queer tropical creatures as stowaways in the banana consignments, the big bunches of the fruit offering convenient hiding places for many small animals. Insects, of course, one might easily expect to find, but some of the arrivals are vertebrates—even mammals. There are, it seems, at present in the Belle Vue Zoological Gardens at Manchester three specimens of the little marine opossum of America which arrived in England in this way. Snakes are more likely to occur as stowaways, and the present specimen is a banana traveller. It appears to be a small

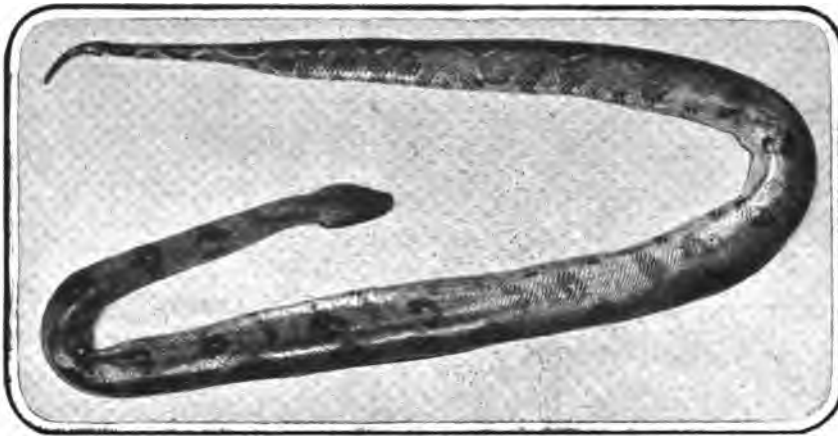


Photo.]

A Strange Stowaway.

[Copyright.

This snake came over alive in a consignment of bananas, and was killed at Covent Garden Market.

specimen of one of the boa or python family, showing the characteristic form—almost dog-like—of the head, and minute scaling of that part, distinctive of these big snakes. Big as they are when adult, they are, of course, small enough when newly born, and the arboreal habits of the group are in favour of their seeking hiding-places in such plants as the banana. Any snake arriving in this way should be treated with the greatest caution until its identity is positively ascertained; for though it is easy enough to distinguish our viper from the harmless grass and smooth snakes, there is no general rule for distinguishing venomous from harmless species when the snakes of the world have to be taken into consideration, so that a fatal accident might easily occur.—F. F.

Identity of Birds.—The following may interest some of your readers. I was standing at my gate in Shepherd's Bush on Friday evening last at 10.30 p.m. when I heard a noise over my head, and, as the moon was shining brightly, I could descry about fifty birds, which were going in a north-easterly direction. I could not understand what they were, but perhaps you could discover when I tell you that their note resembled "Que-ak, que-ak, que-ak," repeated somewhat quickly five times in succession. I only saw them as they crossed the beams of the moon in front of me, but heard their note several times, and judging by this they were flying very fast. You may also be interested to learn that at Ravenscourt Park, at the Shepherd's Bush end, there has been a "Shakespeare garden" for over a year now.—EDWARD M. PARS, B.E.N.A.

Astronomy. THE PLEIADES.

By Norman Lattey.

LET us take a farewell look at that beautiful winter group, the Pleiades, just about to leave us until the autumn. It will be noticed hanging over the western horizon, gleaming against the fading twilight like a cluster of tiny diamonds. There is no other group visible to the naked eye that can compare with it in the brightness and closeness of the constituent stars.

To ordinary vision there are only six stars visible in the cluster, but keener sight can detect a seventh, the number mentioned by both Hipparchus and Aratus. Exceptionally gifted observers have seen eleven, twelve, and even fourteen. Through a telescope the number increases enormously. Galileo counted thirty-six.

A chart published some years ago showed six hundred, and on a photograph taken subsequently at the Paris Observatory no fewer than 2,326 stars appear. There is a tradition that one of the brighter stars disappeared at the taking of Troy.

Prof. Pickering has discovered that the spectrum of Pleione (one of the lesser members of the cluster forming a wide pair with Alcyone) is similar to that of a certain star in the constellation Cygnus, which, in 1600 A.D., blazed up into unusual brilliance. Pleione may therefore be subject to irregular fluctuations which would account for its visibility in ancient times, and perhaps also its temporary fading concurrently with the historical event referred to.

The close grouping of even six stars of such conspicuous brightness is in itself

a most remarkable occurrence. A mathematical calculation shows that the probabilities are 500,000 to 1 against such an arrangement being the result of accident.

The circumstance that the "proper motion" of the majority of them is the same, in other words, that they all move in space together, seems to point to a real connection between them.

Then, again, the spectra of most of the brighter stars is of a similar type, also suggesting a common origin. Moreover, it is now well established that the entire group is wrapped in the folds of a mass of nebulous light which, according to one authority, may be "the remains, perhaps, of the nebulous matter from which the cluster has been evolved." The absence of colour in any of the stars is another curious feature pointing to the same conclusion.

The brightest star, Alcyone, viewed through even a small telescope, forms, with three smaller adjacent stars, a pretty quadruple. From a record dating back to the tenth century, it looks as if this star has since considerably increased in brilliancy.

Many of the fainter stars seen by optical aid probably lie far beyond the cluster, and have no connection with it. In fact, a photograph taken at the Lick Observatory shows the surrounding sky to be densely crowded with minute stellar points. A binocular field-glass or eye-piece of the lowest magnifying power on a telescope will give the best general views. The Pleiades seem to have claimed attention in the remotest times, and there is a reference to them in the book of Job.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to A. E. Johnson, Christ's Hospital, Horsham.

What is the use of tears?

The object of the tears is to moisten the front of the eyeball so as to allow of the easy movement of the lids over it, and to wash away any irritating matter which may fall upon it. Tears are secreted by a gland at the outer angle of the orbit and are distributed over the eyeball by winking movements of the lids. The secretion is stimulated by dryness or irritation of the eye. They are carried away into the nose at the inner angle by two-minute channels which have their openings on the margins of the lids.

What causes lightning to take different forms at different times?

Lightning may be zigzag, straight, or globular. In the first case the lightning cloud is far from the earth and great resistance is offered by the air condensed by the passage of a strong discharge. The spark then diverges from the straight line, seeking the path of least resistance, and hence takes a zigzag course. When the lightning cloud is near the earth there is little resistance; hence the flash is straight. In globular lightning the flashes occur as balls of fire. These descend slowly to the earth where they explode often with fatal results. Sheet lightning is the flash reflected in the clouds when it is concealed from view.

Why if you wash in hard water does the soap float in flakes upon the surface of the liquid?

Water containing salts of lime and magnesia in solution is called "hard" on account of the difficulty of obtaining a lather with soap in washing. When soap (consisting mainly of the sodium salts of the fatty acids, oleic, stearic, and palmitic) is added to such water it is decomposed, and flakes of insoluble matter, formed by the union of the acids of the soap with the lime, etc., of the salts, appear on the surface of the water. The soap continues to act in this way, until all the hardening salts have been thrown out of solution, when any further addition of soap at once produces a lather which is available for cleansing purposes. In this way the water is "softened" at the expense of the soap.

Why is it easy for a hoop to remain upright while going, whereas it falls when still?

While the hoop is going, every particle in it is tending, through centrifugal force, to move on in a straight line at a tangent to the circumference of the hoop, and in the same plane. The result is that these forces act round the hoop in the same

direction, thus keeping it in a vertical plane until, through friction between the hoop and the ground, the centrifugal force is overcome, and the force of gravity causes the hoop to fall over on one side.

Why when a plumb line is let down from a high tower does the lead incline a little from the perpendicular towards the tower?

This is due to gravitation, which is a term applied to the attractive force all particles of matter exert on each other. The resultant force is towards the greater mass, and thus all unsupported terrestrial bodies fall towards the earth. In the case of the plumb line, the lead is attracted both by the earth and the tower, and although the greater attraction is towards the earth, that of the tower is shown by the leaning of the lead towards it.

Why do connoisseurs of wines close their mouths and distend their chins for a few moments when tasting wines?

In order to spread the sample of wine over those parts where the sense of taste exists. The fumes are also thereby driven into the back nasal passages which, being continuations of the back palate, are slightly sensitive to taste.

Why is it that if a bird be painted on one side of a piece of card and a cage on the other, and the card be whirled rapidly round upon a string, the bird appears inside the cage?

The impression produced by the light from any object remains on the eye for something like a quarter of a second after the object has been removed. Thus when the card is rapidly whirled round, the image of the bird is constantly renewed before it has had time to disappear from the retina of the eye. Similarly, this occurs in the case of the cage, and consequently the two pictures appear simultaneously.

Is there any explanation why some kinds of cut flowers grow in water and some do not?

The inflorescence of a plant—that is, the flowers and flower stems—are really modified stems and leaves. This is shown by their developing, under certain conditions, leaf-buds, etc. For this reason the growth of flowers after being severed from the plant and placed in water, is subject to the same law as the growth of other parts of the plant, stem, and leaves, for instance, when similarly treated. The absorption of water has the same effect in both cases, but just as cuttings of some plants wither soon when placed in water, so some flowers cease to grow, and for the same reason. Failure in both cases is due to bad circulation. Flowers that take up water freely must keep on growing if the other conditions are favourable.

Why when two boys are upon a see-saw, if the heavier of the two kicks the earth, does the small boy sink to the ground?

Why is physical exercise beneficial to health?

Which creatures breed most abundantly?

What is the Will o' the Wisp?

Why does a shuttlecock spin in the air when it is falling after being beaten?

What is the best situation for a garden?

Week's Wild Life in Pictures.

(See page 331.)

THE holly blue butterfly, of which photographs are here given showing the male (1), female (2), and underside (3), has been seen a good deal during the bright weather of the early part of this month. In the male the wings are purple blue with a dark, blackish edge, the female being also blue, not brown, like those of the common "blues." Beneath, the wings are a whitish blue. It is found in England and Ireland, though its distribution is somewhat local.

4.—The wood anemone is a delightful plant in April, when it may be seen carpeting many a copse with its white or pink fluted flowers. It is also a favourite in gardens where the natural style is admired. There is no better plant for the hardy fernery, wild garden, or even the rockery. There are both purple and double-flowered varieties, as well as a very pretty sky-blue form named *Robinsoniana*, which may be purchased cheaply from dealers in herbaceous plants. The creeping rootstock is black, and the best time to transplant it is when the leaves begin to fade. The Pasque flower (*A. pulsatilla*) is also in flower now, but it is much rarer, being found only on chalk downs and limestone pastures.

5.—The greenfinch's rather artless nest will now be a common "find" almost anywhere, for, after the sparrow, this seems to be the most numerous of all our finches. Even in London it breeds freely—in Regent's Park, at all events—and holds its own with the sparrow by sheer force of will and pluck, although far inferior in cunning and not so bold in its approaches to man.

6.—The young eels now begin, under the alias of "elvers," their wonderful migration up the rivers, leaving the sea, in which they have passed the earliest stage of their lives as strange little transparent creatures. Once arrived at their final home in fresh water, they do not return to the sea till mature—then to spawn and die. The "broad-nosed eel" of earlier writers is the male, and the "sharp-nosed" the female of our one fresh-water species.

7.—The oyster-catcher's mottled drab eggs, like most of those of the shore-bird family to which it belongs, are commonly deposited on the bare ground, sand, rock, or tussock; but sometimes, as in the present instance, the bird puts them on a bed of shells it has prepared.

CORRECTION.—By an error the first photograph in our "Wild Life" for March 20th was described as Male Catkins of the Black Poplar. The photograph really showed the female flowers of the Balsam Poplar (*P. balsamifera*), which are green in colour, with the stigma orange.

Our Private Sale & Exchange.

All Readers of "The Country-Side"

should take advantage of the exceptional facilities which this new feature offers to them.

See Back Cover.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 330.)



1, 2, and 3. Holy Blue Butterfly, *Lycena argiolus*. Male, Female, and Underside (J. M. Blackman). 4. Wood Anemone, *Anemone nemorosa* (Miss Hincks). 5. Nest of Greenfinch, *Ligurinus chloris* (B. Hanley). 6. Common Eels, *Anguilla vulgaris* (S. and W. Johnson). 7. Nest of Oyster Catcher, *Haematopus ostralegus* (Fred Box).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, APRIL 20, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Pre-paid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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Keddle Net Fishing.

By THOMAS HEPBURN.

A PRIMITIVE, but at the same time an effectual method of catching mackerel gives occupation, and, perhaps, a rather precarious living, to a hardy group of fisher families who live in the vicinity of Dungeness.

For years past the English Channel has been casting up an apparently inexhaustible supply of pebbles derived from some unseen and mysterious source along this part of our coast.

Winchelsea, Rye, Old Romney, and Hythe, formerly numbered amongst the Cinque Ports, are now separated from the sea by acres of shingle. Starting from a point not more than four miles to the east of Hastings, the sea has thrown up this stony barrier against itself right away as far east as Hythe.

There are only two spots in all the distance where the barrier of stone is broken—one at Camber, near Rye, where the pebbles are replaced by sand dunes; and the other near Dymchurch, just beyond Littlestone, where for some distance the beach is reinforced by a fine sea wall.

Curiously enough, after the tide has fallen a certain distance, instead of a stony bottom to the sea being revealed, level sands stretch out with the receding water for a mile or even more. It is these flat sands which are taken advantage of for the keddle net fishing.

This method of fishing may be called primitive, because it resembles, only in the aquatic sphere, one of man's earliest plans for catching wild animals—that of erecting long fences, with wings, leading into some enclosure, the animals being driven along the fences and guided by the wings into the enclosure, and so caught. In the present case the guiding fences are formed with nets hung on long poles embedded in the sand.

A long net fastened securely at the top and bottom of the poles, and pegged into the sand, forms a barrier in the water at high tide reaching nearly to the surface of the sea, some twelve feet or more from the bottom.

The plan upon which these net-hung fences are generally arranged is a series of square enclosures, called "bights," placed behind each other at short intervals, and running out to sea at right angles to the trend of the coast.

In each square, the side nearest the land has an opening in the centre. A straight line of net runs from high water mark to the centre of the opening of the first bight; a similar line runs from the back of the first to the centre of the entrance to the second bight, and so on through the series, consisting generally of not more than four bights. The idea of the scheme is that fish swimming against the connecting lines of netting from either side must follow them up until they enter one of the enclosures.

The success of this simple trap depends upon two habits of the mackerel. The first of these is that at certain seasons of the year—roughly speaking, between February and August—

it makes a practice of frequenting shoal waters, and especially those of the coast in question.

The second habit is that when it meets an obstacle its instinct leads it to turn from the shore towards the open sea. So that when a shoal of mackerel swimming along these Dungeness sands run their noses into the netting fences connecting the bights of a keddle net, they immediately turn seaward until they come to the opening into the bight, through which they happily swim, believing for the moment that their obstacle is passed.

But when they come against the outer walls of the bight itself they still attempt to move in a seaward direction, and keep on swimming backwards and forwards along that side of the netting, where there is no opening, until the tide falls sufficiently for the fishermen to come down and take them.

There are no boats used in this keddle net fishing. A horse and cart is driven down over the sand as soon as the tide is low enough for the men to fish the first bight. They drive into the entrance, and take out of the cart a small seine net. Two men take hold of the end of this, and work with it right round the outer edge of the bight, carrying the net back after making a wide sweeping circle, to their companions near the cart.

The net is then skilfully shortened until the fish are contained in a bag at the end of it, out of which they are scooped by means of a large landing net into the cart. As soon as they have finished one bight they go on to the next, until the whole series have been fished. The cart, as it is filled, makes continual journeys up to the pebbles.

There the fish are shot out into a heap, washed in salt water, and packed in boxes almost before the last kick is out of them, and sent to the railway station—either Lydd or Rye, at whichever place the earliest train can be caught. Other fish often find their way into these traps. Sometimes there are large catches of herring. Occasionally there will be a useful bag of plaice or flounders.

But the mainstay of the fishery during the season is the catch of mackerel. Many things get in which are of no interest to the fisherman, but are to the general observer. The writer on one occasion saw the whole sandy floor of one bight covered with minute dabs about two inches long. And another day the water was full of little squids, which squirted sepia broadcast whenever they met with the slightest provocation.

They are a hardy and industrious race of men who work these fisheries. At each low tide, whatever its hour may be, the bights have to be fished, and the fish packed and sent to rail. An hour and a half spent wading breast high in all weathers and seasons, twice in the twenty-four hours, is not a luxurious mode of making a living. Even in the heat of mid-summer teeth are chattering by the end of it. Contrary, perhaps, to the ideas of the uninitiated, the men put on more clothing rather than throw it off when they go into the water, generally covering the upper part of the body, whether it is hot or cold, with an oil skin coat.

Each keddle net seems to support some three or four families, and in nearly all cases has been handed down for successive generations in the one line. At the end of a good season the heads of these families will net perhaps an equivalent of from twenty to thirty shillings per week for the year.

On a bright sunny morning in June, when there is a big catch of mackerel, the beach round each stand gives a picture full of life and the vivid colouring of nature.

Upon these occasions a flag is run up which can be seen for miles round, and men, women, and children flock in numbers from all quarters to help wash and pack the piles of glittering fish, which are quickly soiling their wet sides, and losing their iridescent hues, as they beat their lives out against their fellows, or on the stones.

The scene is perhaps fuller still of a quiet interest when there are fewer fish and more time to ponder. Then, wading up to your waist in one of the bights, you may see the rush and swirl of mackerel through the salt water as the net encloses them, and catch sight of the movements of the dabs and flounders on the sandy bottom as they avoid your feet and legs.

You will hear the long-drawn "scree" of the tern coming from its nesting haunt on the pebbles, and you will be able to watch it moving with strong and graceful flight, hovering here and there with rapid wing beat, until with downward sweep it seizes a silvery morsel from the water. Your eye is filled with the contrasting harmonies of colour spread so lavishly before you.

Additions to the Natural History Museum.

By R. Lydekker.

FROM time to time visitors ask members of the staff to explain to them in what respects the skull of one animal differs from that of another, or how one particular species may be distinguished from its immediate relatives.

So far as the smaller British animals (using this word in its popular acceptance) other than bats are concerned, such a question will be altogether superfluous as soon as a case recently installed in the British saloon at the end of the bird gallery is completed.

It is the object of this exhibit (which is already in a very forward condition) to display at a glance the distinctive generic and specific character of the animals to which it is devoted. Where there are several nearly allied species, as in the case of the stoats and weasel, or the short-tailed field-mice, the skins and skulls of each are placed in juxtaposition in such a manner as to bring their distinctive peculiarities into prominent notice; magnifying glasses being placed over the skulls of the smaller kinds in order to show the character of the teeth.

Turning to newly-received individual specimens, ornithologists will be interested in a grey jackdaw, from Kenmare, Co. Kerry, recently presented by Mr. A. H. Berthoud, and placed in one of the cases in the North Hall.

Except for the crown of the head and portions of the primary quills of the wing, which retain their normal sable hue, the plumage is uniformly pale grey, with narrow black lacings to some of the feathers.

To the abnormality case in the North Hall has been added the skull of a sparrow with excessive growth of the lower half of the beak, which is fully half-an-inch larger than the upper portion. Something had apparently put the two halves out of gear, so that they did not wear against one another in the usual manner, the lower half altogether escaping abrasion, although the upper one has been kept in its normal condition. Mrs. Brew, of West Ealing, is the donor.

A much stranger abnormality is a malformed elephant's tusk from Mombasa, the gift of Colonel Hayes Saddler, Commissioner of East Africa. So strangely-formed and ponderous is this mass of ivory, which weighs many pounds, that it is difficult to realise at first sight that it is a tusk at all.

It looks, in fact, like a large ill-grown and warty mangold-wurzel. Whether disease or injury has been the primary cause of the abnormal growth is not stated on the label.

Everyone who knows anything at all about natural history is acquainted, at least by name, with the Port Jackson shark, which has attained celebrity on account of being the solitary existing representative of the group of crushing-toothed sharks which was so dominant during the period of the oolites. Many are, however, by no means familiar with the appearance of the creature, and it is, therefore, satisfactory that a mounted specimen coloured in imitation of nature, has been installed in the fish gallery.

The Microscope.

THE ECHINODERMATA. By A. H. Williams.

THE term *Echinodermata* is used in natural history classification to denote the sub-kingdom that includes starfishes, sea-urchins, brittle and sand stars, feather-stars, and sea-cucumbers. The word is a compound of two Greek terms that signify a prickly or leathery skin (*echinos*—hedgehog, *derma*, skin). Each and all of these creatures provide the microscopist with much food for his hobby.

The common star-fish, or "five fingers,"

numbers of minute perforations, the function of which is the discharging of water swallowed by the creature with its food. The glassy spicules with which the integument is furnished are seen to greater advantage when removed from their natural position.

The skin is also provided with *pedicellariæ*, curious organs something like a bird's beak in form, that are constantly opening and closing; their function is not clear. One theory is that they are responsible for keeping the part clear of the various marine forms that might obtain a lodgment upon it.

The second photo-micrograph is of another star-fish—one that belongs to another family. These are known as the *Ophiuridæ* (from "ophiura," which means a serpent's tail; in this case the analogy is not very difficult to recognise).

The anatomy of this branch differs very considerably from that of the preceding form; the arms are not provided with suckers, nor do they contain any prolongation of the digestive organs; they are merely arms external to the body, and are easily separated from it at the will of the animal. It is this fact that is responsible for the name given—"brittle-star."

Professor Forbes once provided an admirable and quaint description of this suicidal tendency: "As it does not generally break up before it is raised above the surface of the sea, cautiously and anxiously I sank my bucket to a level with the dredge's mouth, and proceeded in the most gentle manner to introduce *Luidia* to the purer element. Whether the cold element was too much for him or the sight of the bucket too terrific I know not, but in a moment he began to dissolve his corporation, and at every mesh of the dredge his fragments were seen escaping. In despair



Phot.]

[W. Baskshaw.

Bones of one of the Starfishes.

Notice their resemblance to the soles of shoes.

is to be found on every part of our coast, sometimes in great profusion, and particularly where there are rocks. Its anatomy is not a very complicated affair, and a little time spent in examining a fresh specimen will arouse a lot of interest, even without studying it in a very scientific manner: its tentacles or "ambulacra," that are during life constantly in motion; the organs of locomotion, the army of these extending and contracting are a charming sight.

A little dissecting of its parts will expose the curious fern-like branches of the stomach, and when these are removed the splendid structure of the skeleton will be seen.

Thousands upon thousands of pure white columns are ranged in double vistas, and are over-arched by an elaborate structure of the same material as the pillars. I know of nothing that can compare with this sight for delicacy and beauty.

Imagine a cathedral aisle half a mile in length, which is supported by a double row of white marble columns, and whose roof is formed of the same beautiful material; then let all the pillars be bowed toward each other in pairs, so that their capitals rest against each other, and a dim idea will be formed of the wonderful structure of the star-fish.

For this description we are indebted to that talented writer, the late Rev. J. G. Wood.

For the microscope the upper surface of the creature provides good material. One item in particular is a good one for a low power, the "madrepore tubercle," a small round organ that is marked in a manner similar to the variety of coral from which it is named.

Between the convolutions of this are



Photo.]

[E. Horsnail.

The Brittle Star.

Its scientific name *Ophiuridæ* is derived from a word meaning a serpent's tail.

I grasped the largest and brought up the extremity of an arm with its terminating eye, the spinous eyelid of which opened and closed with something exceedingly like a wink of derision."

Next week we hope to continue this subject by giving some account of the sea-cucumbers, etc., from a microscopist's point of view.

Live-Stock for Profit and Pleasure.

POULTRY.

By "CHANTICLEER."

The "Day Old" Chick Trade.

WITH the advances of poultry culture and the increased education in the hatching and artificial rearing of chicken by machinery, it is but natural that breeders should take advantage of Nature's all-wise provision of newly-hatched chicks being able to subsist for twenty-four hours without food, owing to the absorption just prior to their leaving the shell of the yolk or pabulum.

But the uninitiated will be surprised to learn the extent to which this day-old chicken trade has developed, and will hardly realise that such a thriving industry exists whereby thousands of strong, vigorous chickens are despatched on the day of hatching — almost direct from the incubators—to all parts of Great Britain to eat their first meal hundreds of miles away from the hatching machines.

It has been sometimes asserted that chickens artificially hatched are not so strong or vigorous as those hatched under the hen, but this is an erroneous idea, as those of experience who have employed both methods will endorse my statement that if there is any difference, the hardiest and strongest chicks are those brought out by the incubator, whilst, as a rule, they are not infested by insect pests.

In incubatories it is found that chicks artificially hatched and reared grow as fast, as strong, and are quite as healthy and vigorous as those hatched by natural methods; this is especially the case when such well-arranged and reliable machines as "Cyphers" are used.

The pioneer of this wonderful trade informed me of the difficulty he first experienced in creating a demand for day-old chicks, as both poultry-keepers and fanciers were slow to grasp the fact that these birds would travel long distances in the parcels' van of express railway trains much better than when a week or a fortnight old, as the pabulum keeps them strong, and, being very quiet, they are not liable to trample on each other.

Here I should explain that day-old

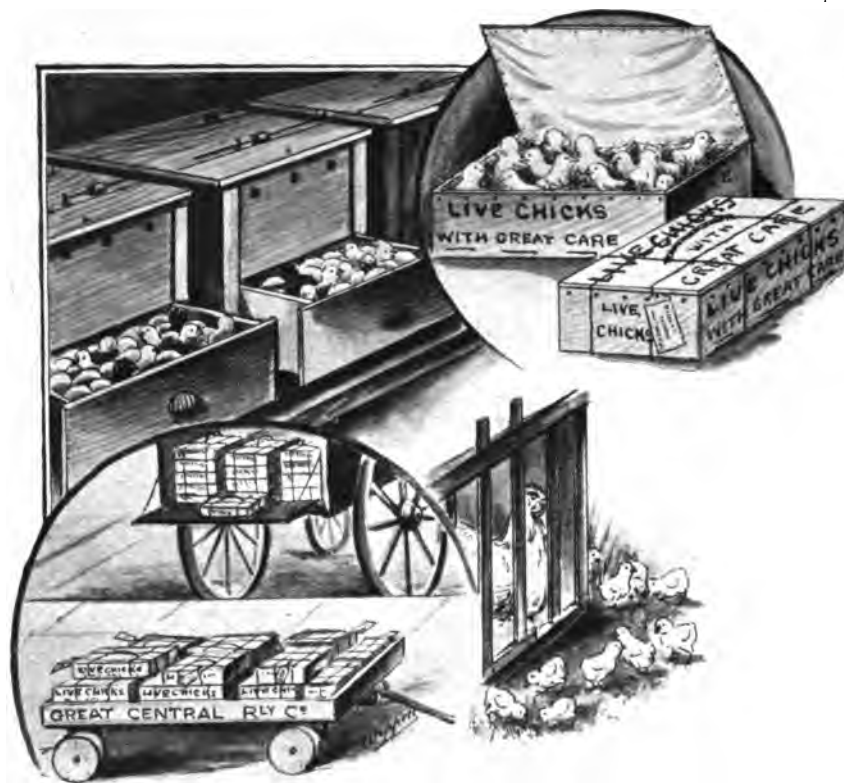
chicks are packed in dozens in light wooden boxes about eighteen inches long by twelve inches wide, and a depth of about four inches. These are neatly wrapped in brown paper as a protection from draught on the journey, an aperture being left of about one inch in the cover for the necessary ventilation, whilst in such surroundings they keep each other warm.

On arrival at their destination the next day preparation has to be made for the tiny travellers' reception, either by utilising the services of a broody hen or an artificial brooder. In the former case the

chicks are packed in dozens in light wooden boxes about eighteen inches long by twelve inches wide, and a depth of about four inches. These are neatly wrapped in brown paper as a protection from draught on the journey, an aperture being left of about one inch in the cover for the necessary ventilation, whilst in such surroundings they keep each other warm.

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The Day-Old Chick Trade in Various Stages of Progress.

hen must be, of course, secured many days previously, and made comfortable by allowing her to sit on pot or ordinary eggs until she has thoroughly settled down, when, after she has been allowed food and water and given a good dusting with Keating's insect powder, the eggs are at night removed, and the young chickens carefully placed under her, when by the morning she will have brooded them nicely, and will usually be pleased with her charges.

However, before giving the hen her chicks, it is wise to give them a good feed (their first since hatched). It is advisable to lightly boil an egg, and finely chop some with bread crumbs, on which the young fledglings will feed ravenously; a little milk and water in a shallow pan may also be given. If day-old chicks ar-

rive in the mid-day, after feeding well I advise transferring to the hen in a darkened shed, and allowing her to brood them for fully six hours before the second feed, whilst the next day both chicks and hen may be removed to a prepared coop placed on the ground in a sheltered position in a dry and sunny spot.

So successful is the trade in day-old chicks that it is now possible to obtain reliable pure breeds of almost any variety of poultry at prices varying from 7s. 6d. to 21s. per dozen, and I have no doubt the dissemination of useful breeds throughout Great Britain has done much to exterminate the mongrel and mediocre fowls so prominent a few years since; whilst the easy method and low price at which day-olds are sold has greatly encouraged poultry-keeping.

of committees of shows, they are told that only by the selection of one of these names can they hope for club support, and show committees naturally conclude one name is as good as another, and are therefore not to blame when they have chosen an "unfit" judge.

So great has been the agitation on this question that the Kennel Club were petitioned to protect the interests of prize dogs against incompetent judges, but, naturally, the Club had to decline to interfere with the system adopted so universally by the clubs.

It seems the only way yet suggested to eliminate the "unqualified" is for specialist clubs to cease nominating their judges, and, as the *Kennel News* advises, "let it fall on natural selection and survival of the fittest."

If the public do not have judges foisted upon them, they will in the end send their entries to the best men, and the best dogs will win. It is a question whether the judging would

DOGS.

SOME attention has been drawn in the Press by various authorities to the subject of specialist judges, that is to say, the compulsory selection of judges nominated by the clubs of various breeds. Much difference of opinion is expressed as to the wisdom of this course, on the ground that many of these club-appointed judges have no more knowledge of the points of the breed they are judging, nor any more right to be appointed a judge, than that of having presented a trophy to the club, which immediately recognises the donor by placing him or her on the next list of judges.

It is argued that when club lists are in front of committees of shows, they are told that only by the selection of one of these names can they hope for club support, and show committees naturally conclude one name is as good as another, and are therefore not to blame when they have chosen an "unfit" judge.

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If the public do not have judges foisted upon them, they will in the end send their entries to the best men, and the best dogs will win. It is a question whether the judging would

not be more satisfactory if there were fewer Kennel Club rule shows, and also whether such a departure by the Kennel Club would not make Kennel rule shows greater financial successes.

Shows are fast and frequent, and too many judges are required to meet the demand of "a draw" for each show, and every dog advertised nowadays being a prize-winner of sorts, has made "honours as plentiful as blackberries."

Mrs. Aylmer is introducing a miniature Welsh terrier, so the lovers of small dogs will soon have another sharp little tyke to catch their straying fancy.

An almost historic Pekinese dog has just died in Li Hung Chang, owned by Mrs. Browning. Chang travelled with Commander Guy Gamble, R.N., for many years on a man-of-war, and, though subject to discipline, he was ever ready to fight dogs of any breed and double his size. A great favourite of the approved lion-maned type, Mrs. Browning regrets him very much.

Judging by the entries at the members' show of the C.K.A., ladies who own big dogs do not approve of these one-sided fixtures, for the all-important big and sporting breeds were conspicuous by their absence, and totalled less than a fourth of the whole entry of 540, made up mainly by small breeds and toy dogs.

The forthcoming shows which are attracting most attention just now are the Great Dane and Borzoi on April 25th, the Pomeranian Show in May, and the smaller breed show known as the Toy Dog Show. At the Great Dane Show there will be fourteen classes for any colour of this breed, and three each for harlequins, brindles, and fawns, with two classes each for blacks and blues. Such a classification will do much to increase the favour in which this handsome Danish hound is already held.

CATS.

CREAM OR FAWN PERSIANS.

THIS may be said to be the very latest variety in Persian breeds, and one which bids fair to become very fashionable. The term "cream" describes exactly what is the desired tint of these cats, but few and far between are the specimens which are pale and even enough in colour to be described as creams.

In times past, now and then a cream cat would be exhibited in the "any variety" class, but then they might be designated as freaks or flukes. Now, however, fanciers of these cats have a system in their matings, and therefore, as a result, there is a distinct breed of cats established which until quite recently was not recognised, nor was any classification given for them at our leading shows.

It is true that the cream Persians seen in the show pens are often much darker than is implied by the name, and, indeed, are really fawn coloured. In these, as in the lighter-coloured cats, the great thing is to obtain an even tint throughout, and to avoid any patches, streaks, or tabby markings. Some cream and fawn Persians are spoilt by having a blue tint in their coats, and some are slightly barred on head, legs, or tail.

It is a peculiarity of cream cats that the eyes are generally almond-shaped, and are set rather slanting in the head. It is a treat to see bold, round owl-like eyes in cream cats. These in colour should be golden or hazel.

Much has been done by the Specialist Club, with its secretary Miss Beal, to get a better classification for creams at our shows, and a larger number of fanciers are yearly being added to the ranks of breeders of this rather peculiar variety of Persian cat.

Nearly all the best-known cream cats are bred in the first place from orange or blue strains, and you can generally rely on getting some creams by crossing a tortoiseshell-cream, orange or blue-tortoiseshell queen with a blue sire.

Cream males are far more plentiful than females, so that the prices asked for a really good breeding queen may be beyond the reach of many, in which case it is the best plan to buy a tortoiseshell, and if mated to an orange or a blue sire there will almost certainly be a cream kitten in the litter, and thus a cream strain can be gradually built up. Cream cats are very popular with American fanciers, and some of the best bred cats of this breed have been exported to well-known breeders over the water.

Amongst the foremost cream fanciers in the Cat Fancy in England may be mentioned the following:—Miss Beal, Mrs. Hastings Lees, Mrs. Norris, Mrs. D'Arcy Hildyard, Mrs. Western, and Mr. Helmer.

CAGE BIRDS.

WORRIES OF CANARY BREEDING.

Nest Building.

THE canary fancier is, as a rule, a sanguine and hopeful creature. He is generally an enthusiast; often an optimist of the cheeriest kind. This is as it should be, for canary breeding is not always all beer and skittles, and one's patience and hopefulness may be sorely tried at any time.

It will, therefore, not be out of place to give a few timely hints upon the chief causes of worry which are apt to crop up now. One of the first will doubtless be connected with nest building. Hen canaries are notoriously bad architects, and many of them appear quite unable to fashion anything even remotely resembling a proper nest.

The difficulty is often overcome by providing the hens with a lined earthenware nest-pan. These can be bought almost anywhere, and being of a nest-like shape, and having a soft felt or swansdown lining fixed in, are very good substitutes for a proper nest.

If, however, one is using the square nest-box, and the hen fails to construct a nest, it will have to be made for her. It is quite a simple matter to model a perfect nest. But do not make it for her too early, or she will forthwith pull it to pieces. Wait until the evening of the day before she is expected to lay her first egg.

Boil a fowl's egg (which may be kept whole and used for feeding the birds next morning), and whilst it is hot get out the nest-box and a nest-bag, which is a bunch of nest-building materials. Pick out the moss and coarsest stuff, and roughly shape it with the fingers in the box.

The other portion of nest-bag will consist of fine cow-hair. Pull this out loosely, and press lightly in a mass into the middle of nest-box. Now place the hot egg on the larger end upon the top of the mass of cowhair and in the centre of the box.

Twist the egg round as though turning it on a pivot, and press lightly meanwhile until the egg is sunk in the cowhair to the depth of an ordinary nest. Allow the egg to remain there for a minute or two whilst you smooth down the edges round the outside; then remove it, and a beautifully-modelled nest of the proper size will be the result.

Egg Binding.

This is the next serious trouble that is apt to occur. On the morning when a hen is expected to lay an egg you may find her huddled up on the nest, panting, with feathers puffed out, and eyes more or less closed, and, of course, no egg has been laid. When these symptoms are pronounced the case is serious, and admits of no delay. Three-fourths fill a jug with hot water (hot enough to give off a good steam, but be careful the steam will not scald; tie a piece of muslin loosely over the top).

Now carefully catch the hen, give her a drop or two of equal parts of brandy and water in the beak, drop one drop of castor oil or glycerine in the vent, and place the hen on

top of the jug of hot water. Keep one hand over her that she may not escape, and allow the steam to work through her feathers for a few minutes.

Sometimes the egg will be deposited on the muslin during this operation, in which case she may be returned to her proper cage, and given half a teaspoonful of niga seed; but, in the opposite case, give her a little more brandy and water, and put her in a cosy small cage, and keep her in a warm place for the time being.

The whole process may be repeated in a couple of hours if she shows no signs of improvement. But do not tamper with a hen unnecessarily; so long as she appears fairly bright and active, let well alone. I have known inexperienced fanciers inflict this punitive treatment upon a hen absolutely without a cause; hence this caution.

Sweating Hens.

The term is purely a technical one, used to describe a peculiar condition in which the hen continues to sit closely on her newly-hatched chicks as she might do on a nest of eggs.

The feathers underneath the hen's body are sometimes quite moist. When this condition arises the young ones are not fed, and gradually die from starvation. This trouble is not easily cured. Removing the cock, and leaving the hen to her own resources, will often rouse her to do her duty, and a bath, in which a little common salt is dissolved, may help to revive her, if she will take it; but, as a rule, treatment is of little avail, and if one happens to have a pair of good foster parents, to which they can transfer the young, available at the time, that will be the most satisfactory way out of the difficulty.

Non-Feeding Hens.

Still another cause of disappointment is that apparently healthy hens will neglect their parental duties to the young, or feed them only in a half-hearted way. A good variety of food is the best thing to tempt them. A separate supply of cracked hemp seed will often work wonders, as also will a regular supply of crisp, fresh greenstuff, and a tin of soaked rape seed may also be given with advantage.

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the April competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

What Is It?

THE MARCH 30th PROBLEM.

The result of this competition is unavoidably held over until next week.

NOTICE.

Our House and Apartment Register is the very best medium for Letting or Hiring Houses or Apartments.

(See Back Cover.)

PROFESSOR KEITH-HARVEY'S BOOK ON DEAFNESS.

Great Scientist's Offer of Free Advice to Deaf People.

There has recently been published a book the importance of which to thousands of people whose hearing is impaired or lost is certain to mark it as the book of the year. Its author, Professor Keith-Harvey, has earned world-wide renown for his researches in the cause and cure of deafness.

It is impossible for anyone but a student of this subject to appreciate the amount of ignorance and error prevailing. This new book on deafness, apart from its value as a contribution to scientific literature, has a distinct practical value, for it indicates to the ailing person a most successful method of permanently curing this, the most dreaded of all diseases.



Professor Keith-Harvey's method of treating deafness is told about in the new book, which book is to be sent free of charge to all sufferers from this ailment. There must be thousands to whom such a book would prove of value. In simple language it conveys to the ailing sufferers a distinct message of hope, and we earnestly advise every afflicted reader to write at once for this valuable book.

"THAT UNUTTERABLE SILENCE."

None but the deaf know the horrors of this dreaded disease; the pain, the isolation, the feelings of despair which it brings make this the most serious ailment that can affect the body. Deafness is a disease that works slowly and surely, growing in severity day by day. Not many people become suddenly deaf, the majority arriving at this stage through neglect or the aggravation of a minor trouble.

Professor Keith-Harvey proves conclusively that it is possible to cure some of the most obstinate-cases of deafness. By the method which he has perfected every sufferer in his or her own home may under the guidance of this highly successful specialist on diseases of the ear, carry out a method of treatment which has proved its value in thousands of cases, among which have been many of long standing and most obstinate.

Every reader of the COUNTRY-SIDE suffering from deafness or having a relative or friend suffering, should at once accept Professor Keith-Harvey's offer and write for his very valuable book, in which the details of this new treatment are given. Professor Keith-Harvey is willing, where special details of the ailment are given, to advise sufferers as to the best method of treatment in each individual case. When writing for the book it is advisable to give detailed symptoms of the deafness, so that this valuable advice may be sent. The book and this advice are sent gratis and post free. Letters or postcards should be addressed: Professor G. Keith-Harvey (Room 27A), 117, Holborn, London, E.C.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on this page) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Tits Pecking Buds.—No, tits do not damage sound buds, like bullfinches; when they peck at buds they are seeking for insects.—(to L. Attwater.)

Large Egg.—Eggs considerably larger than the one enclosed, weighing 4 ounces, have previously been recorded.—(to MRS. B. HUBAND.)

Irritation of Cat's Ears.—The irritation in your cat's ears may be caused by canker. Boracic powder blown down a paper funnel is a good remedy. I should recommend a dose for worms. Apply to Wilson, Ashford, Middlesex. Salt and sulphur are both good in moderation.—(to M. F. BUSH, Bridport.)

Lump on Pigeon's Wing.—Bathe the lump on your pigeon's wing twice daily for a week with warm water, to which a few grains of permanganate of potash have been added, and give the bird a pinch of Epsom salts.—(to J. Rossborough, Aston Magna.)

Dormice.—Dormice are just emerging from their hibernation, and can be purchased from most dealers in pet stock. Should advise you to buy one at once; if you have any difficulty in procuring one, an advertisement in this journal will soon bring you replies.—(to Miss N. Potter, Warkworth.)

Eggs Without Shell.—Hens that lay eggs without hard shells should be given some shell-forming matter, such as ground oyster shells. We have had several instances reported to us of two eggs such as you describe being joined by a thin tube of skin.—(to H. Richardson, Marlborough.)

Fir Cone Identified.—The specimen you send is the top of the immature cone of a fir tree of some kind, probably the common Silver Fir (*Abies pectinata*), which grows to a height of 100 feet or more in this country. A full-sized cone is from six to eight inches long, and two inches in diameter.—(to Miss Spratt, New Cross.)

Preserving Fungi.—Unfortunately, most species of fungi defy all methods of preservation, though some—as the puff-balls and others—do dry in a very satisfactory state. Of the more fleshy kinds it is best to make good coloured drawings—or models may be made in plaster—for which instructions will be given if required.—(to H. J. Francis, Hinckley.)

Identification of Waterfowl.—1. The goose with face and neck black, rest of head white, and body mottled white and brown, is the Canadian goose. 2. The duck with chestnut head and dark grey and white body is the widgeon. 3. The swan with orange beak, black at base and tip, is the ordinary tame or Mute Swan. 4. The black and white diving bird of the size of a coot is the male tufted duck.—(to T. E. Griffiths.)

Skeleton Leaves.—The skeleton leaf which you send is crushed out of all recognition. There are many forms of lime (*Tilia*) with leaves more or less like the one you send. Some of the poplars have the same form, and skeletonise in the same way. We do not understand your question.—(to C. E. ENDERSBY.)

Grafting Fruit Trees.—You can graft your damson tree at once. If a young one—say, three or four years old—cut it off to within a foot of the ground, and graft it by making a

slit in it about two inches long, and inserting the graft of yellow plum, which should be a one-year-old shoot, and cut into a long wedge; then bind with soft string, and cover the whole of the cut portion with clay put on so that the whole looks like an ordinary float, the clay forming the bulged portion.—(to A. E. PORTER, Downham Market.)

How to Establish a Breed.—If your blue Andalusians produce a well-laced marking in their offspring, there is every reason to believe that the blacks and whites from his blues when mated together will produce blues with equally good lacing, and, of course, in double the number. Mr. Punnet, of Caius College, Cambridge (he, with Mr. Bateson, are, I believe, the only people who have bred Andalusians statistically) tells me he finds the blacks to breed very true; occasionally a white feather appears, but this happens with blacks of any breed. The Andalusian breed can never be "fixed," the blues will always split up into blacks and whites, owing to their hybrid nature.—(to H. Platt, by B. N. Wale.)

Parrot Plucking Itself.—Improper food or insects are almost invariably the cause. Once formed, the habit is extremely difficult to cure. Smear the parts it plucks with a little common castor oil, keep it supplied with soft wood to chew, and chastise with a small cane switch when it is seen pulling at its feathers. You might also try the effect of a small collar round its neck with two inches of light chain dangling from it in front, which will help to draw its attention from its feathers. Do not give any sops or animal food at all; give sweet fruits instead.—(to C. Davidson, Glasgow.)

Height of Trees.—The Aspen, *Populus tremula*, grows to a height of from 40 to 80 feet. It is a short-lived tree, with spreading branches, easily broken by the wind, and it is happiest in moist situations. The "trembling" of the leaves is due to their thin compressed petioles, which causes them to shake with the slightest air movement. Old Gerard likened them to women's tongues, always wagging, and the Highlanders have a curious superstition that Christ's cross was formed of aspen wood, hence the "trembling" of the leaves.—(to W. Charles, Hull.)

The Myrobalan or Cherry Plum.—The myrobalan plum (*Prunus cerasifera*) is botanically a mystery. Its native country is unknown, though some botanists say it is Caucasian, others that it is North America, whilst Sir Joseph Hooker is of opinion that it is a cultivated state of the bullace (*Prunus insititia*). It is the "cerisette" of the French, and the "kirschnpflaume" of the Germans. It rarely fruits in England. In some counties, particularly Norfolk, it is largely planted as a hedge, for which purpose it was first brought into prominence by Messrs. Daniels, the well-known Norwich nurserymen.—(to W. H. Burne, London.)

The Bog-Bean.—The Buck or Bog-Bean (*Menyanthes trifoliata*) grows naturally in marshes and bogs, and flowers from May to July. It may be cultivated in a tub sunk in the ground, filled to within six inches of the top with soil, and then kept filled to the brim with water. Procure some rootstocks now, and plant them by placing stones over them to hold them firmly on the soil. The plant will grow in shade, but to get plenty of its elegant fragrant flowers it must be allowed plenty of sunshine. We have seen plants of it established in an ordinary border, where they received extra water now and then in dry weather. If your stream is not too shaded, you could grow the bog-bean in it by planting the rootstocks in a wicker basket and sinking it in a shallow place.—(to G. E. G.)

COUPON.

Answers to readers cannot be guaranteed unless three of these coupons be forwarded with each query or specimen for identification. Available till April 27th, 1907.

B.E.N.A.

(British Empire Naturalists' Association.)

SPECIAL ADVANTAGES FOR MEMBERS.

Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street; and 223, Oxford Street.

Messrs. Harman and Sons, hatters, 87, New Bond Street, W., allow a discount of 5 per cent. to B.E.N.A. members.

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose 1d. stamps.

Application for membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically, with lists of Local Secretaries. Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, 6d., post free. Postal orders preferred to stamps.

*All applications should be addressed to the local secretary of the district, or to Miss G. B. Norreys, Warham, Wells, Norfolk.

Changes of Addresses, etc.—All corrections, additions, changes of address, etc., etc., to be incorporated in the next edition of the list, should be notified to the Organising Secretary, Mr. J. W. Mersey, 611, Chorley Old Road, Bolton, Lancs.

B.E.N.A. Fund.—This little fund exists for the purpose of defraying such small items of expenditure as are inevitable in the working of a large association which charges no fee for membership. Amount previously acknowledged, £15 17s. 6d.; 1s., Miss M. J. Woodhouse. Total, £15 18s. 6d.

Expert Advice.—Mr. A. E. Hodge, of 23, Stowe Road, Ravenscourt Park, London, W., has kindly offered to identify any specimens of reptiles or batrachia that may be sent to him, and to place the benefit of his experience in this branch of natural history at the disposal of any members who may desire information thereon. Of course, carriage must be paid on specimens sent, and stamps enclosed for return and for reply.

Schools Mutual Aid.—The Hon. Cordelia Leigh informs us that the Education Committee of Manchester as well as the committees of Warwickshire and Gloucestershire, have now undertaken to defray the expenses of postage in connection with the Mutual Aid Scheme.

In addition to the schools previously mentioned, the following are already on the list: Ethelburga Street, Battersea (Boys); St. Anne's, Wandsworth (Girls); Shillington Street, Battersea (Boys); Tennyson Street, Battersea (Girls); St. Peter's, Leigh, Lancs., and St. Paul's, Seacombe, Liverpool—making fourteen altogether, so far.

The master of the Ethelburga Street School writes of the scheme: "Apart from the knowledge of and fellow feeling with the life of the country-side, it may have a good influence in widening the horizon of the boys' mental outlook, and of deepening their sympathy with people in other surroundings; and I hope it will eventuate in the establishment of friendships and the interchange of visits which would be of great value."

Offer of Seed.—Mr. J. J. Towns, of Holbeach, Lincolnshire, writes to say that there was a large response to his offer to supply cowslip seeds to members of the B.E.N.A. He will be pleased to forward seed again at the flowering season to members who send him a stamped addressed envelope.

Book Exchange.—Mr. Cameron Davidson, of Glasgow, writes:—"I wish to suggest another use for the B.E.N.A. I think it would be a very great advantage to members if some system of book-exchange could be carried on amongst them. A scientific book of any practical value is generally rather dear, so the average lover of natural history has to be content with one, or perhaps two, books on the particular subject which is his study. Now, if each member of the B.E.N.A. could obtain the use of the many other books belonging to fellow-members it would be a great source of help and enjoyment to him. I think that the scheme could be worked very easily, if it was once started." What do members think of this?

Specimens Wanted.—"I have been asked by several teachers in Croydon schools, if I could let them have specimens of butterflies and moths, for them to lecture on as object lessons. I have not many duplicates; and if any B.E.N.A. members have any they could send me, I will willingly pay carriage."—W. H. BAYLIS (Hon. Sec. B.E.N.A., Croydon District), "Bewdley," 69, Canterbury Road, Croydon.

Wild Nature in Your Home.

To a lover of Nature no picture can possibly compare with a stereograph; and to be able to have in one's possession a collection of stereographs of the wild life of one's own country is almost as good as to be able to ramble day after day amid fields and hedgerows studying Nature at first hand.

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But as stereographs they are perfect; and experts have described them as among the most wonderful triumphs of the Nature photographer's art. Seen through the stereoscope they give you not mere pictures of nests and birds and trees, but the nests and birds and trees themselves.

They were taken by a keen and clever naturalist, who sometimes travelled hundreds

of miles, and spent days, and even weeks, to obtain a single stereograph.

An interesting description of the objects depicted, written by Mr. E. Kay Robinson, Editor of the COUNTRY-SIDE, is printed on the back of each photograph.

Such views can be obtained nowhere else, and yet, although they are unique, the COUNTRY-SIDE is offering them at a rate which is within the reach of all.

There are forty subjects, a list of which is given on this page, and we are offering them to readers at the rate of threepence each post free.

Below is a reduced reproduction of one of the views, and the description on the back of the stereograph.

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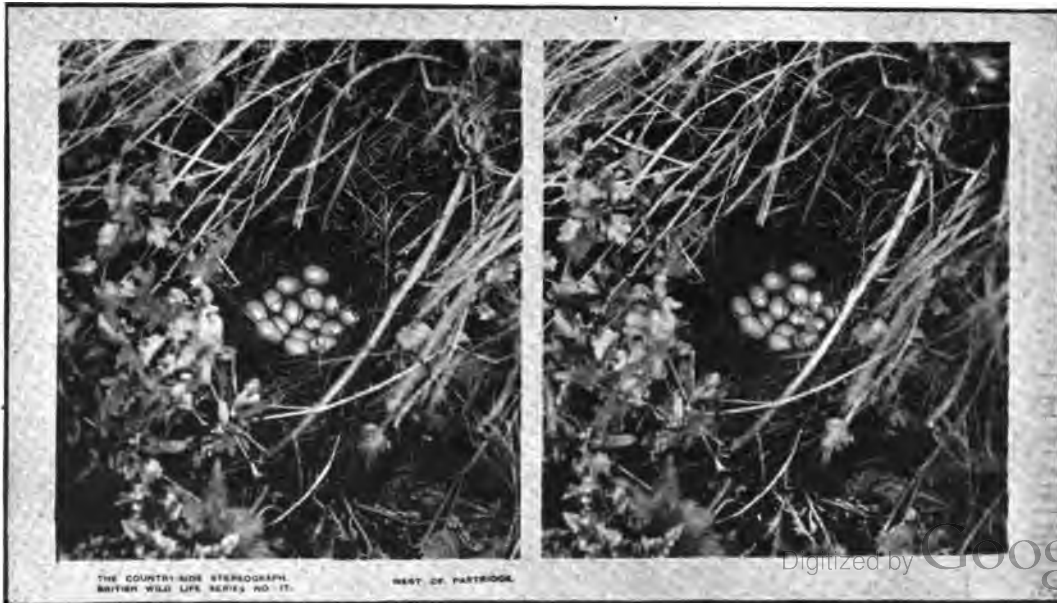
British Wild Life Stereographs

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- 7, Sedge-Warbler's Nest; 8, Baby Peewit;
- 9, Nest of Chaffinch; 10, Young Thrushes;
- 11, Young Turtle-Doves; 12, Reed-Warbler's Nest and Eggs;
- 13, Grass or Ring Snake; 14, Nest of Lapwing;
- 15, Young Kestrels at their Dinner; 16, Nest of Missel-Thrush;
- 17, Nest of Partridge; 18, Young Spotted Flycatcher on Nest;
- 19, Nest of Whinchat; 20, Nest of Lesser Whitethroat;
- 21, Manx Shearwater's Nesting Burrow and Egg;
- 22, Manx Shearwater in Nesting Hole; 23, Razor Bill's Egg;
- 24, Razor Bills on Rocks; 25, Lesser Tern's Young and Egg;
- 26, Common Tern, Egg, Young, and Shell;
- 27, Young Ring Plovers;
- 28, Ring Plover's Nest and Eggs;
- 29, Shag on Rock;
- 30, Shag's Nest and Eggs;
- 31, Nest of Long-tailed Tit;
- 32, Young Moles;
- 33, Nest and Eggs of Robin;
- 34, Young Kestrel;
- 35, Nest and Eggs of Moorhen;
- 36, Eggs of Nightjar or Goatsucker;
- 37, Nest of Wild Duck;
- 38, Nestlings of the Jay;
- 39, Nest and Eggs of Willow Warbler;
- 40, Nest of Red-legged Partridge.

NEST OF PARTRIDGE.

The nest of the Partridge (*Perdix perdix* or *cinerea*) always seems much more of a nest than it really is, owing no doubt to the number of eggs and the solid weight of the bird making a deep impression in the scraped-up grass and rubbish of which it really consists. The effect is usually heightened, too, by the admirable selection which the bird always seems to have made of a site; though here, again, the herbage which grows up rapidly all around the nest after it has been established is the chief factor in what looks like such cunning concealment. The nettles, thistles, hawthorn, and tangled hedgerow grass in the picture show that this nest was placed in the partridge's favourite site, amid the rank growth of a hedge-bank where no grazing cattle pass. Where partridges are numerous, however, their quarrels drive many pairs to use far less eligible sites; and it is interesting to see a bird which has made her nest on the open ground in a pasture springing up at the nose of some bewildered cow whose blundering steps have threatened the safety of the clustered olive treasures.



THE COUNTRY-SIDE STEREOGRAPH
BRITISH WILD LIFE SERIES NO. 17.
NEST OF PARTRIDGE.

Wild Life Stereograph, No. 17.—Nest of Partridge.

The Garden.

Work for the Week.

Temporary Shelters.

FOR a few weeks onwards the great difficulty will be to find accommodation for the batches of plants which cannot remain wholly in the open until the year is further advanced. Crowding under glass is a disastrous policy, and each successive potting-up will be likely to lead to a problem as to where the plants are to be put. Fortunately, with many subjects it is only the effects of frost that are to be feared, and for these a merely makeshift shelter is all that is required. A covering of canvas can, for example, be readily laid over a rough framework of battens against the outside of a greenhouse wall; by the use of canvas, or even oiled-paper, serviceable "lights" can be easily constructed at but trifling expenditure both of coin and of labour.

Cloches and Handlights.

These useful aids must not be overlooked by the complete cultivator. Extensively employed by Continental gardeners to protect tender plants put out long before the advent of June, they are now greatly growing in favour with market-gardeners at home. Granted the energy to put on and take off, even a large flower pot or a box forms a useful substitute for protection at night where the handlight is not available. To the handy man we suggest the employment of oiled-paper upon a framework of canes or sticks.

Ficus Elastica.

So remarkably amenable to any sort of treatment is the familiar India-rubber plant, that, combined with its good appearance, it well deserves its popularity as a house plant. So long as a plant continues to thrive it is not advisable to re-pot; and we employ the seemingly "old wive's" method of keeping large plants in small pots in good condition by an occasional dose of weak cold tea with marked success. Should a plant develop too much bare stem, a successor may be provided by taking off the top nine inches in length, and inserting it in a 3-inch pot. It will quickly make roots if placed in bottom heat and shaded. Rich loam, with the addition of a little sand and charcoal, forms the best compost, and the less familiar variegated form is also a commendable plant.

Asparagus Fronds.

Several species of Asparagus, notably *A. plumosus*, and its forms, and the now popular *A. Sprengeri*, are valuable greenhouse plants, and provide a good supply of excellent decorating material. Large plants are benefitted by division and repotting firmly in a compost of light but rich soil. Liquid manure is required during a period of active growth, and after this has ceased the plants should be rested.

Hanging Baskets.

Many plants appear to excellent advantage in suspended wire baskets, and these should now be made up. The inside must first be lined with a layer of green moss, and next to this a layer of canvas or sacking should be placed to prevent the soil working through. Achimenes, begonias, and Hoyas in the stove, and fuchsias, *campanula isophylla*, ivy-leaved geraniums in the greenhouse, are all particularly good plants for baskets.

Fruit Tree Spraying.

In addition to the winter spraying with a solution to render the buds distasteful to birds that we have previously recommended, to ensure good crops it is probable that a further spraying will be needed with the advent of the foliage upon fruit trees and bushes.

Before operating, the character of the in-

magnitude, a knapsack sprayer, or some more powerful machine made for the purpose, is a necessity.

Such birds as the titmouse, the nuthatch, and several others are very active in destroying aphides until there is ripe fruit for them to turn their attention to; they may, therefore, now be of service in the fruit garden.

G. T.

Saxifraga Granulata.

THE meadow saxifrage occurs in great abundance all over England, competing with the cuckoo flower (*Cardamine pratensis*) for first place wherever there is moisture and a little shade. Not that they require shade, but the grasses, their natural enemies, are weaker in shade, and therefore other things have a chance. This is true of many other plants, such as daffodils, bluebells, and even of some ferns, which are forced to put up with shade by their more sturdy competitors for the sunny positions; plants often growing in nature not where they would do best, but where they can hold their own against others. The double-flowered form of the saxifrage, here figured, is a favourite border plant, and when planted in large masses it is very effective in April and May. It originated as a sport, and is propagated by means of stem cuttings struck in autumn or by division.



Photo.]

Double-flowered Saxifrage.

When planted in large masses it is very effective.

[G. P. Raffill.

sects to be destroyed must be ascertained. These may be of two kinds, and entirely different methods of dealing with them will have to be adopted. For aphides, red spider, and other pests that absorb the juices of the foliage by sucking, the following mixture will be found most efficacious:—One quart of soft soap, and an ounce of liver of sulphur, dissolved in half a gallon of hot water; while it is still warm add one pint of paraffin, incorporating the whole thoroughly by agitating it violently; to be applied to the trees diluted by the addition of ten gallons of soft water.

To effectively check caterpillars and other biting insects with tougher skins than the foregoing, a spray must be applied that will poison the foliage that they eat. Paris Green is usually employed for this purpose, and as a stronger proportion is sometimes injurious to foliage, an ounce of this to eight gallons of water is a sufficient strength, to be stirred immediately before application. It must on no account be employed while the blossoms are open, or when the fruit is getting big.

Spraying must be very thorough to be profitable. It should not be performed in hot sunshine. Both sides of the foliage must be wetted, and, for spraying operations of any

ness, care, and skill, and the absence of these virtues. We have no belief in "gardening made easy" specifics. Roses that are kept in health by good cultivation are less subject to injury from insects than neglected weak plants are. They are, however, all liable to be attacked, bad weather, a wind laden with insects may fill a clean bed of roses with pests in a few days. Watchfulness is, therefore, necessary, and as soon as flies appear an insecticide should be applied, not once, but once a week or so, until growth is finished. What is the best insecticide? There are dozens of mixtures that will kill insects and not hurt roses. Soft soap and quassia, in the proportion of 2 oz. quassia chips to ½ lb. soft soap boiled in one gallon of water is one, and there are ready-made mixtures to be had from dealers which are equally efficacious. But they must be used with intelligence. We know clever rose-growers who use no insecticide other than clean water applied vigorously with a syringe or hose, and this keeps down green fly, thrips, spider, and even grubs and caterpillars.—(to be continued.)

Some further answers to Garden Queries will be found upon page 336.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 102. VOL. 4.

APRIL 27, 1907.

1d. WEEKLY.

Profitable Bee-Keeping.

By a BEE-KEEPER.

In many parts of England little is known of the management of bees, but in the north of England—the Border country especially—the keeping of bees is an industry much indulged in; and, if carried on with due care and knowledge of the subject, it is an eminently interesting and profitable hobby.

The writer, a bee-keeper also, has gathered statistics from bee-keepers, both of "hall" and "cottage," and thinks a few particulars may be interesting to readers of this paper.

On the North-Eastern line from Newcastle to Carlisle many a traveller is struck by the numbers of beehives at the various stations, and it is a fact that both stationmasters and signalmen in the North are among the most successful bee-keepers.

The best way of commencing an apiary, as a stock of beehives is called, is to buy a strong swarm early in June. If the queen be fine and strong there will be some splendid honey after the heather season. From this one hive swarms from year to year may soon increase to a number.

From one signalmen I hear the following particulars. "I have kept bees for many years. I find them very interesting work, and far less bother than any other animals I have tried. Some years they are very profitable; in others we have bad luck, but I have never lost by them in any year. By a 'bad year' we mean loss of stock from cold or disease or lack of white clover, for when there is no good clover the bees take that sweet, sticky stuff on the leaves of forest trees, as well as the blossoms of gooseberry, raspberry, etc., and this is 'mixed honey,' the tree sticky matter making it black, and it is no good for the market.

"The greatest loss is when the heather fails, however. The honey secreted in heather is in the form of fine powder, and

a storm of hail will beat it all out, so we bee-keepers are specially anxious for no hail in August. I have twelve stocks of bees, and use the bar-frame hives; they cost 14s. each, but if you buy one anyone who can carpenter a bit can make his own quite decently by copying it. I have no shed or shelter: the boxes stand outside all the year round. I paint them often to prevent cracking. I make them ready for the winter at the first frost sign—i.e., I lift the lid off and lay a piece of cotton stuff over the tops of the bars where the

to a thick syrup—and give each hive about half-a-pint every few days. The syrup is in a bee-feeder on the top of the bars. I cut a hole in the calico so that the bees can crawl up to it.

"The bees do real 'house cleaning,' as all bee-keepers can testify. Every spring they turn out of the hive all the dust and refuse and rustiness and dead bees that have accumulated during the winter. Then all is ready for the new brood and new honey. I have hives twelve years old, which have had bees in all the time,

still wholesome and the bees doing well. They have had no other cleaning but their own.

"The early spring flowers give more pollen than honey, but the pollen is what the young brood want. But as the apple-blossom, etc., comes on the honey season begins, and the bees begin to fill the bars (the upright frames in the lower part of the hive). The queen has been busy laying eggs. She begins in the early spring, and lays about 300 a day (so they say), and

later on sometimes 1,000 a day. They are hatched in about three days.

"About June 1st I put on the first crate of sections. Each crate holds 21, and these wooden sections I buy for 2s. 6d. a hundred. They are placed under the calico immediately over the frames. The last three years have been poor ones, but 1899 was not so bad, though the latest flowering year I can remember. That year I did not get my sections on until June 20th, when the white clover, on which we rely for the best flower honey, was still hardly out—and little of it at that. I only got one crate of sections on each, which I took away on August 1st.

"I found I had 144 lbs. of honey, an average of only 12 lbs. a hive, which is a very poor proportion. I then put on all

(Continued on page 347.)



Photo]

[Copyright.

A North-Country Keeper and his bar frame hives.

bees are, and then store honey; above the calico a square of carpet tucked in, and over it again a chaff cushion. Then I put on the lid and lay a bit of carpet outside it. 'Bees chilled' easily means 'bees killed.' I always leave in each hive at least 28 lbs. of honey. If less, there must be other food given. I do not interfere with them again until March, but if there has been a heavy fall of snow and that bright, warm sunshine coming out after, I lay a cloth over the front of the hives, or else the bees come out to the sun and die by hundreds in the snow.

"About the middle of March, on a warmish, sunny day, I open the hives and quickly examine them, and begin feeding, for by this time they will have finished the store honey. I make the food in large quantities—best cane sugar boiled in water

Country-Side Notes.

*Why! who makes much of miracles?
As for me I know nothing else but mira-
cles.*

*Every square inch of space is a miracle;
Every square yard of the surface of the
earth is spread with the same.*

All to me are unspeakably perfect miracles.

—WALF WHITMAN.

(Sent by Mrs. T. L. Ward.)

AS spring days pass, we scarcely notice how our outlook grows circumscribed. Instead of the transparency of leafless woodland, through which we could catch the glint of the wood-pigeon's white-flecked wings as it slanted up to its nesting-pine many roods away, now the bronze green haze of myriad-budded twigs shuts down upon all vision further than a dozen yards.

"In the open, too, the landscape narrows. Here a flowering elm and there a leafing willow shuts up some vista which gave glimpses of many fields beyond. But it is on the closer, smaller scale of hedge-row and shrubbery that we feel most how Nature in spring draws a green veil, growing denser every day, between us and the secret doings of her life. She treats us like children, too—and, indeed, we are her children and deserve to be so treated—embroidering the outside of her green veil with pretty flowers and making gay butterflies dance before it to amuse us. So we go for a walk and rejoice because we see many things; but the things which we do not see are countless.

"Here is a squat thorn-bush, two feet high, which will presently fire out a volley of nearly a dozen new-fledged wrens, and next winter, when the leaves have fallen, the man who passed daily within a few feet of it will say, 'Bless my soul, fancy a nest in that bush all the while!'"—From "The Country Day by Day," April 17th.

Someone has been making complaints of the destructiveness of the American grey squirrels which have been liberated in Bedfordshire. They are accused of having killed off the English squirrels, and of destroying birds' eggs and even young rabbits, besides doing damage to trees. These are heavy indictments, if they can be substantiated, and it is certainly an unwise proceeding to liberate in any country district beasts which are so little to be restrained as squirrels are. It is a curious fact, that animals seem to be so much more liable to become pests than birds; no doubt the difference of their breeding-habits gives them a better chance for undue multiplication.

It must always be remembered, however, that the damage done by introduced animals is always liable to be exaggerated, simply because the animals in question have been introduced at all. People talk of "upsetting the balance of nature" by such introductions, as if the natural equilibrium were always perfectly adjusted, and as if species native to a country never increased unduly, as we know they often do.

Besides which, the fact that a native species may become a pest to introduced crops or stock is entirely overlooked; the ravages of the Kea Parrot of New Zealand, with its sheep-vissecting habits, and of Australian cockatoos and parrakeets on grain and orchard and vineyard produce, are examples of the iniquities of the native-born fauna.

Then, too, when the native birds of a country disappear, and introduced ones become common, as has happened in New Zealand and Hawaii, it is always assumed that the foreigners have driven out the natives. A more correct view of the case would probably be that man, by clearing away the primitive vegetation, renders his settlements unsuitable for the native birds, while he notoriously introduces such species as live on his cultivated land, and even about houses, such as the sparrow of Europe and the mynah of India. Thus there need not have been necessarily any collision between native and foreigner in such cases; to take a home parallel, if you drain a marsh and make it into cornland, the reed-bunting and water-rail give place to the yellow-hammer and corn-crake, but one cannot accuse the last two birds of extirpating their relatives; they have simply occupied a spot which has become unsuitable for the latter.

One way in which imported birds probably have had a deleterious effect on native ones in many places is, no doubt, the introduction of new diseases and parasites. In Hawaii, the native forest birds have been found suffering from a poultry disease; and the gape-worm of poultry infests so many other birds in Europe that it is quite possible that these or other birds have spread this parasite far and wide among native faunas. Such agencies as this would account for the comparatively sudden and very complete disappearance of the New Zealand quail, which has always been a puzzle to naturalists; the bird could hardly have been killed off in the very few years in which it disappeared, but some contagion from poultry or the introduced game-birds might very well have been widely fatal, judging from what we know about newly-imported diseases among human aborigines. Native flies and earthworms disappear in New Zealand before our house-fly and earthworms, and here diseases or parasites, rather than an actual struggle between the creatures, must be the cause of the recession of the natives.

It will be noticed that we have been having a good many early records of the cuckoo and nightingale this year. People are very sceptical of early cuckoo and nightingale records, on the ground of possible mistakes; but it seems hardly likely that all our correspondents have been mistaken; of course, a hawk on the wing may be taken for a cuckoo in person; and a small boy or a cuckoo clock may simulate the "wandering voice" we all love so well. But after all, small boys and

cuckoo clocks are not omnipresent; and anyone who knows what a cuckoo looks like at all knows that it has very much the appearance of a hawk when in flight and would be on their guard against a mistake. As to the nightingale, the song-thrush is supposed to be mistaken for it as far as the note goes, though I do not see how any one who knows the song of the two is likely to confuse them; and the nightingale, though plain-coloured, is a very unmistakeable bird if seen.

A Dublin correspondent, Mr. Joseph G. Johnston, wrote asking if the nightingale sings throughout the summer nights, quoting Milton in a way which implied that the poet may have been guilty of a too free use of poetic licence, by affirming of the nightingale that "She all night long her amorous descant sang." Mr. Johnston has enjoyed one delight—to read Milton—but he has evidently as yet been denied another perhaps more glorious—to listen by night to the nightingale. Milton was beyond doubt a greater poet than naturalist; yet he was quite right, probably catching much inspiration from the nightingale's notes in the hushed hours of night, though maybe he might have been more literally correct had he written "he" instead of "she," in view of the generally-accepted idea that the cock sings to entertain the hen patiently sitting on the nest close by. It is only during the earlier summer nights, before the advent of family cares, that these divine notes—as of a heaven-sent flute—may be heard in all their faultless tone and liquid purity, forming with the wild roses and the honeysuckle a triple crown to England's summer, matchless and incomparable.

One sometimes hears complaints that the nightingale's song has been over-praised; that the nightingale of literature has had imaginary charms attributed to it, and so forth. But it is forgotten that the bird must have had commanding merits of its own to attract attention in the first place; nor can it be said to have an unfair pre-eminence because it is a night-singer, for it often sings by day, and some other species often sing at night—recently I heard a song-thrush singing loudly in Regent's Park with the street-lamps alight and the moon risen. The ancient Greeks hardly mention other birds than the nightingale as songsters at all, which is pretty clear proof of their belief in its superior excellence.

In our issue of April 13th was a note from Mr. R. C. Barnes, Woodford Green, Essex, calling attention to the fact that, although the pigeon-hole door by which the birds in his aviary are fed was left open from about 9 a.m. till evening, none of the birds escaped. This was certainly lucky, but not so extraordinary as it might seem at first sight; for the birds had been in the aviary some time, and knew the feeding-door quite well, but—simply as a direction from which food came to them

and not at all as a means of going in and out. Had the birds been wild ones freshly caught, they would have tried the whole time to find an exit, probably with speedy success.

* * *

When you have kept fowls confined in a run for a long period, and you suddenly throw open the door by which you have entered regularly to feed them or to collect eggs, you may be surprised that they do not at once pass through it to freedom. You may even drive fowls towards an open door, and they will turn back at its very threshold time after time. If left to themselves gradually to find their way out, you may notice that some of them will actually pass through the aperture without at the time being cognisant of the fact.

* * *

Fowls, unless they are used to going in and out by it, are unable to associate an open door with freedom. You may watch them trying their level best in their stupid way to join those that have already passed out, provided they did not see where these escaped. But once left those still in the run see one of their number pass out at any given spot and the remainder will quickly follow suit.

* * *

A pretty instance of a bird's confident cheek was sent by "Rex," in which a robin perched on a fisherman's rod within six feet of his hand. The robin probably from past experience had a view to dainty morsels of the food which fishermen are wont to partake of as they stand stolidly to their rods. It is not thought that this robin imagined at the time that the rod on which it alighted was held by the fisherman's hand, regarding it merely as affording a convenient point of view. The most delicate striking of a fish would certainly have caused its departure from the rod. There are several instances of robins nesting in scarecrows representing human beings; and if any one cared for the experiment of standing motionless day and night in a robin-haunted spot in the nesting season, it is quite within the bounds of possibility that a pair of robins might build a nest in one of his pockets.

* * *

Mr. Barnes also mentioned the close approach of a robin which was attracted by earwigs evicted from an old tent, but cessation of the process with a view to having a look at him was quite enough to dispel the robin's confidence, and resulted in his retirement to a safe distance. Now if Mr. Barnes had continued the rout of the earwigs or had pretended so to do—which would have been the same thing to the robin—all would have been well, and then without giving it any indication of hostility, he might have managed to have enjoyed a prolonged look at his bird guest.

* * *

The main season of broccoli is upon us, and of its many varieties none perhaps is better entitled to general appreciation than the Purple Sprouting. Here is a rather amusing story showing that its appreciation is not limited to the dinner-table. A gentleman in the course of a professional round was presented with the wherewithal for a dish of purple sprouting flowers, tied up in two bundles asparagus fashion, for

which they are so excellent a substitute. At his next visit, on being asked whether he would like some more, he replied that he certainly would, for his wife was simply delighted with the first lot, which were still decently fresh in two vases on either side of the drawing-room mantelpiece. And yet people find time for argument on the question of ladies going through a course of domestic science.

* * *

Young rooks will now be adding to the clamour and excitement of the rookeries, and to feed them in their early days the parents probably give the farmer more genuine assistance than at any other period, for corn is not suited to the needs of the nestlings; they must have juicy insects and grubs, and plenty of them, too. It is not disputed that the parent rooks, while searching the fields of sprouting corn for the dainty morsels, take toll of the corn for their own support. But, viewing impartially the food of rooks throughout the year, it must be confessed that their ideas on the food question justly incur the wrath of the farmer.

* * *

Mr. F. W. Millard has recently made some interesting notes on a gamekeeper's pets, and there are some very sound remarks as to the utility of such creatures as teachers of certain intimate details of the lives of their wild relatives, notably in the matter of favourite foods, for instance. Perhaps the most interesting pet dealt with is a woodcock, which was reared from quite an early age, and is still quite tame. Mr. Millard alludes to the great appetite of the bird, and to its use of feeling more than sight in procuring its food. Bread and milk is greedily devoured by it, and raw meat also relished, so that anyone capturing a wounded or orphaned woodcock should have no difficulty in feeding it, especially if worms could be first procured to "meat it off."

An Exile from the South.

I.

The dreary moorland, bleak and bare,
Stretches for miles around me:
The lapwings' wailing fills the air—
How mournful can that sound be!
A bitter wind is whistling shrill,
Straight from the Northland blowing:
The cold grey sky grows colder still—
To-morrow 'twill be snowing.
O! for the lanes of Dorset dear,
That wander here and wander there,
In sweet seclusion straying!
That I may visit them again,
In April sun and April rain,
My heart is ever praying.

II.

I raise my eyes, and see the fells
In solemn grandeur sleeping:
Their savage loneliness repels;
Their sternness sets me weeping.
I pity this poor twisted thorn,
The sport of wind and weather—
That clump of fir-trees, all forlorn,
That bend and strain together.
Oh! could I feel the west wind blow,
And see the woodland snowdrops grow,
Where Dorset meets with Devon!
The gently swelling hills and vales,
The blue sea, flecked with red-brown sails—
'Tis like a dream of heaven.

IDA NORMAN.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Arrival of Migrants.

CUCKOO heard in Fletching Village, Sussex, on March 29th (early morning).—(W. T. Moore.)

MARTINS: Four seen at Shustoke, Warwick, on April 7th—a week earlier than last year's earliest arrival.—(T. C. Mace.)

NIGHTINGALE heard March 29th at Staplehurst, Kent.—(R. G. Avery.)

NIGHTINGALE "both seen and heard (by two of us) between Eastbourne and Hailsham," on April 11th.—(C. T. Lambert.)

RED-BACKED SHRIKE very abundant on morning of March 21st at Pembroke, but not heard or seen afterwards until 27th; since then very plentiful here.—(A. John.) [Is our correspondent quite certain about these birds? It is much too early for them, but right for the Wheatear, the mate of which, in some points of colouration, though not in shape, rather resembles the male Red-backed Shrike.—Ed.]

STONE CURLEW arrived at Thorpe, Suffolk, on March 25th.—(C. H. Lay.)

STORKS returned to Rudka, Russian Poland, with the S.E. wind, about 10 days earlier than last year. Snow still lying in places. Thaw commenced 12 days ago (April 6th, 1907) after the longest and most severe winter in the district for 180 years.—(G. M. Waldram.)

WRYNECK heard March 30th at Staplehurst, Kent.—(R. G. Avery.)

YELLOW WAGTAILS returned to Cullen, Banffs., on March 15th.—(J. Gowan.)

Nesting Notes.

DIPPERS: Pair seen building on March 26th at Glenlogan, Kilbirnie, Ayrshire. They do not usually begin here till May.—(R. Houston.)

Nest found recently at Staplehurst, Kent, with two eggs of the THRUSH and two of the BLACKBIRD in it.—(R. G. Avery.)

BLACKBIRD nest in old tin, which had lodged open end up in a clump of bushes, found outside Richmond Park on Good Friday.—(H. Cosens.)

Insects.

ORANGE-TIP BUTTERFLY seen at Yate in Gloucestershire on March 31st during sunshine spell at Easter; usually seen nearer Whitsuntide.—(B. G. Mathison.)

Departure of Migrants.

REDWINGS: Two very tame specimens which wintered in Chapel-field Gardens, Norwich, last seen on March 24th.—(R. Gillingwater.) Individual heard singing not far from Bishopston, Glamorgan, on April 6th; very few now left.—(H. Griffiths.)

WILD GESESE heard overhead at S. Queensferry, Scotland, on Sunday night, April 7th; next morning a large flock seen flying in N.W. direction, wind a point N. of W. Geese have been unusually common here this winter.—(A. Morisson.)

Special Announcement.

Our Second Birthday Number.

We are glad to be able to announce that our issue for May 18th will be a specially enlarged number, and will, we believe, exceed in beauty and interest any number we have yet issued.

Already we are at work upon this, and articles are being prepared by distinguished specialists and authorities upon the various subjects that interest COUNTRY-SIDE readers.

The number will be very profusely illustrated, and as there is sure to be a great demand for this issue, we would urge readers to place their orders with their newsagents AT ONCE.

The special birthday number for May 18th will contain title page and index to Volume IV. of THE COUNTRY-SIDE.

The Country-Side.

Special Birthday Number. Price 3d.

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Rabbit's Double Tail.—I have enclosed a double tail taken from a wild rabbit. Is this a very rare occurrence? I thought it might be of interest to your splendid paper, the COUNTRY-SIDE.—A. GYNGELL, Bridport. [I do not recollect seeing or hearing of a rabbit's



Photo.]

[G. B. Norreys.

A. Rabbit's Double Tail.

double tail before; but, as the tails of both rabbits and hares are organs which have dwindled through disuse, they are naturally more liable to variation than organs which have active functions.—Ed.]

The Nightingale in Scotland.—You may be interested in the following notes upon an attempt to establish the nightingale in Scotland, which appeared in the *Glasgow News* the other day:—"The patriotic Sir John Sinclair, acting on the general rule that migratory song-birds almost always return to their native haunts, endeavoured to establish the nightingale, but unfortunately failed. The attempt was conducted on a scale large enough to exhibit very clear results. Sir John commissioned a London dealer to purchase as many nightingale's eggs as he could get at a shilling each. These were carefully packed in wool, and sent down to Scotland by mail. A number of men had been engaged to find and take good care of all robins' nests in places where the eggs could be hatched in perfect safety. As regularly as the eggs arrived from London the robins' eggs were removed from the nests and replaced by the nightingales'. These in due course were hatched, and the young reared by the foresters. The young nightingales, when full fledged, flew about, and were observed for some time afterwards apparently quite at home near the places where they first saw the light. In September, the usual period of migration, they departed, and never returned."—WALTER STEWART, Blantyre.

The Living Sign.—A good deal, I have noticed, is made of "The Living Sign" Inn, or, as they call it in our little town, "The Beehive" Inn, and there was a note on the subject in your valuable paper for April 13th. Of all the paragraphs sent to papers about it, I have not yet seen one mention the fact

that, about nine or ten years ago, a certain traveller wrote on the boarding which encases the tree trunk the following: "Grantham, Grantham, you need not boast; it's only a beehive stuck on a post." No doubt a careful examination of the casing would show these words now.—C. C. MILLHOUSE, Grantham.

Photograph of Primroses.—Several readers having inquired about my photograph of primroses in the COUNTRY-SIDE for April 6th, page 303, at the request of the Editor I give below an outline of the various details that went to the making of the photograph. The study was taken at sundown on a perfectly calm spring evening, the soft, diffused light at this time of day being ideal for flower work in the open air. The lens used was of 10-inch focus on a whole-plate; stop 16, and exposure about 10 seconds; plate, Thomas's No. Medium. The primroses were growing on the side of a bank, and so in a somewhat tilted position; the camera was placed slightly above their level, the swing front and back being brought into play to swing the lens and plate forward and downwards.—S. CATO.

Lark and its Dead Mate.—A friend of mine was walking out one morning in one of our parks in Bradford during summer when he heard in front of him a lark give its full song, though when looking up in the air he was unable to see it. Thinking that it was rather strange for a lark to give its full song on the ground, he searched in the grass to see if there was a nest, when to his surprise he saw the female bird lying dead on the ground. The male bird would hover about a yard above her and sing out a full song; then he would drop down and give her a pull with his beak. Again he would rise and sing, and this order was repeated several times.—A. DOWNS, Bradford.

The Sound of the Snipe.—With reference to the mumming, bleating, or neighing sound produced by the snipe during the pairing season, it appears that M. Meves, of Stockholm, first announced, in an account of the birds he observed during a visit to the island of Gottland, in the summer of 1856, that this sound was caused by the tail feathers. The following notice of the discovery appears in "Eccentricities of the Animal Creation," by John Timbs:—"M. Meves found the tail feathers of our common snipe, in the first feather especially, very peculiarly constructed; the shaft uncommonly stiff and sabre-shaped, the rays of the web strongly bound together and very long, the longest reaching nearly three-fourths of the whole length of the web, these rays lying along or spanning from end to end of the curve of the shaft, like the strings of a musical instrument. If you blow from the outer side upon the broad web, it comes into vibration, and a sound is heard, which, though fainter, resembles very closely the well-known 'neighing.' But to convince yourself fully that it is the first feather which produces the peculiar sound, it is only necessary carefully to pluck out such an one, to fasten its shaft with fine thread to a piece of steel wire, a tenth of an inch in diameter, and a foot long, and then to fix this at the end of a four-foot stick. If now you draw the feather, with this outer side forward, sharply through the air, at the same time making some short movements, or shakings of the arm, so as to represent the shivering motion of the wings during flight, you produce the neighing sound with the most astonishing exactness. If you wish to hear the humming of both feathers at once, as must be the case from the flying bird, this also can

be managed by a simple contrivance. Take a small stick, and fasten at the side of the smaller end a piece of burnt steel wire in the form of a fork; bind to each point a side tail-feather; bend the wire so that the feathers receive the same direction which they do in the spreading of the tail, as the bird sinks itself in flight; and then, with this apparatus, draw the feathers through the air as before. Such a sound, but in another tone, is produced when we experiment with the tail-feathers of other kinds of snipe. Since in both sexes these feathers have the same form, it is clear that both can produce the same mumming noise; but as the feathers of the hen are generally less than those of the cock bird, the noise made by them is not so deep as in the other case."—T. EDWARD BELCHER, London, N.

Moths' Favourite Resting Place.—In Bromley there is a certain lamp, and nearly all the moths that come to it seem to prefer a small screw near the tap by which the gas is turned on to any other part of the framework. Throughout last year I found no fewer than eleven moths on this small screw, among which were two *trepida* and one *chaonia*. On March 21st last I found one *Hispidaria*.—G. MACKRELL, B.E.N.A., Bromley.

Pied Blackbird.—I noticed an interesting record in your issue of this week referring to a pied blackbird noticed at Fulwood, in this district. May I mention that I have seen a bird which I think must be identical with the one noticed by H. Burgess in the issue mentioned, near to the grounds of my uncle, Alderman W. H. Brittain, about a quarter of a mile from Fulwood Church, several times early in the spring.—A. BRITAIN, B.E.N.A., Sheffield.

The Work of the Ivy.—I have noticed during the last few weeks, in the COUNTRY-SIDE, correspondence relating to the above subject. Herewith I enclose a photograph of ivy growing against a wall. The trunk has been



Photo]

[R. Holliday, Junr.

Ivy Growing against a Wall.

The trunk has been severed for more than thirty years severed for more than thirty years, although for the exact period over that time I have been unable to ascertain. The plant is still thriving, and is in a healthy condition.—R. HOLLIDAY, JUN., Scaur Bank, Lazonby, Cumberland.

White Sparrow.—Last spring a foreman in this neighbourhood found a sparrow's nest with four young birds in it. All of these birds had white feathers mixed with the brown, but one was altogether white, with pink eyes. This bird he had for some time in his possession when a lady purchased it from him. It would be interesting to know if any of your readers have had a similar experience.—GERALD J. GOODMAN, Brigg.

Plants and their Environments.—The adaptation of plants to the places where they are at home is wonderful. I have been trying to get Guernsey lilies, Cheddar pinks, and Cirencester fritillaries to grow at Totnes, and can hardly keep them alive. At Southampton I planted the Roman nettle, but it died at once. On the other hand, I brought from Southampton a yellow garden Phlomis that would not flower there, which, directly it felt the air of Devonshire commenced to blossom. This spring there are a number of tortoiseshell butterflies at the roadside.—A. H. SWINTON.

The Wryneck's Tongue.—You perhaps remember a discussion some time ago as to whether the wryneck's tongue is smooth or rough. Both assertions were made from actual observation. On September 5th last year I examined a wryneck, and found the tongue to be rough, and you said, I believe, that one had been sent for your inspection, which you found rough. Two days ago, a dead wryneck was given to me, which I also examined, and in this I find the tongue quite smooth, except on a slight thickening just beyond the hard end, which has a mere trace of roughness. It would be interesting to make out what determines the character of the tongue, and one wonders whether there is a tendency towards one or other type being perpetuated. In looking at this bird it struck me as strange that such comparatively small wings could serve for its long flights on migration, and I stretched the wings out and measured the expanse from tip to tip. I found, to my surprise, that the surface presented to the air was not less than eleven inches, while the bird weighs a little less than an ounce and a quarter. It seems that one's ideas of proportion are apt to go to pieces as size diminishes. One is not apt to consider the wings of rooks and crows too small for the purpose which they have to serve, yet the buoyancy of these so-called short-winged birds would seem to be greater than that of rooks, pigeons, and such. I measured and weighed, not long ago, a rook and a carrion crow, and found the expanse of the rook's wings to be 34 inches, and its weight 13 ounces, while the crow measured 33 inches and weighed 15 ounces. The rook, however, was picked up wounded, and though seemingly in good condition, may still have lost some little weight. Speaking of migration, I should be glad to know whether the disappearance of the redwings some fortnight before that of the fieldfares, which happened here, was observed elsewhere.—G. ROWCROFT, Besley House, Watersfield, Pulborough, Sussex.

A Note from America.—The weather here is extraordinary—03 in the shade yesterday; and it has been nearly as hot for fully a week. One of the most interesting features of the country round Washington is the great number of large hawks one sees flying over every wood. Sometimes there are as many as twelve together, slowly wheeling round and round above the tree tops. The cardinals are singing merrily just outside the city. Their brilliant colour appears quite tropical, and contrasts oddly with the still, almost bare,

branches of the trees. With regard to the question as to whether thrushes run or hop, I fancy it will be found that in long grass they always hop, whilst on smooth lawns they frequently run. At least, I have noticed this more than once.—J. RUDGE HARDING, Metropolitan Club, Washington, D.C., March 30th.

Thrush's Nest on Monument.—I send a photograph of a thrush's nest taken by me last year. When I arrived the mother bird was sitting on the nest, but became timid and flew a short distance away, and perched on a tombstone near by, and watched operations, crying out at intervals. It was a difficult matter to photograph the nest, as it was so high up. I had to rig my camera up on another headstone. There were two young in the nest, the eggs only just being broken. The position of the nest took my fancy, and I thought it might be useful for production in your valuable paper. The stone is not far from the main road, where there is a great deal of traffic.—JAMES B. GUDGER, Chadderton, Oldham.



Photo.]

[J. B. G.]

Thrush's Nest in a Monument.

It was situated not far from a busy main road.

Wholesale Clearance of Starlings.—An article in a newspaper has just come into my hands referring to the periodical wholesale destruction of birds from one cause or another. It put me in mind of an incident told me by an old West Country friend of mine. He was a native of Plymouth. At the time the starlings were flocking one year a severe gale chanced from the land and drove the flocks out to sea, where they perished. The seashore was strewn with their dead bodies for some miles along the coast. It made such a wholesale clearance of them that for several years starlings were quite a rare bird. It is some years ago now since I heard the tale, but the impression in my mind is that he attributed the reinstatement of the bird in these parts to gradual migration from elsewhere, not from the increase of survivors, as it was questionable if there were any.—A. J. BALDING, Bromley, Kent.

Astronomy.

THE COLOUR OF THE STARS.

By Norman Lattey.

THE majority of the stars shine with a dazzling white light, the sky on a dark night seeming to be studded with diamonds. Closer observation will, however, show that almost every precious stone is represented in the diadem of heaven; not only the diamond, but also the emerald, ruby, sapphire, garnet, topaz, amethyst, and turquoise. The naked eye can discern nearly a hundred of these celestial jewels, and a good field glass will show three times that number, while a telescope will reveal many more.

Several fine red stars are visible at the present time. *Betelgeuse*, one of the brightest in the constellation Orion, is a conspicuous example. *Aldebaran* in Taurus looks so bloodshot that the Arabian astronomers called it "The Eye of the Bull." *Antares*, "The Heart of the Scorpion," in the constellation of that name, can be noticed, from May to October, flashing like a railway danger signal through the evening mists lying along the Southern horizon. This fiery star has also a minute emerald companion, but it is only rarely visible.

Another star, *Alphard*, in the straggling constellation Hydra, "The Water Serpent," has likewise earned the title "The Heart of the Hydra," on account of its redness. As far back as the 10th century the Persian astronomer, Al-Sufi, wrote of its ruddy colour. To the Chinese it was "The Red Bird."

In the little asterism *Lepus* (The Hare), just beneath Orion, there is a remarkable variable star of a most intense crimson. Strangely enough, Ptolemy, in his catalogue compiled about A.D. 150, called the Dog Star Sirius, "fiery red," whereas it is now almost a pure white.

This may, however, be due not to any actual change, but to the use of the expression as a synonym for blazing or flashing. *Capella*, the leader in the Auriga group, is a similar instance. Al-Sufi also termed the famous variable *Algol* in Perseus, red; but it is now quite white. In the Southern hemisphere the star designated by the Greek letter Epsilon in the Southern Cross, together with several others, is decidedly ruddy.

The reddest star visible to the naked eye is, however, in the Northern hemisphere. It also bears a Greek character, *Mu*, and is in the constellation *Cepheus*, but needs at least a binocular to exhibit its tint clearly. Herschel called it "The Garnet Star."

To possessors of telescopes a wide field is open in the department of coloured stars, for the finest examples require proper optical aid to fully perceive their beauty.

The double stars provide some lovely examples of colours. The leading brilliant in the constellation *Hercules* is composed of an orange and emerald pair, the former being the larger. The star *Beta* in *Cygnus* (The Swan) consists of a beautiful combination, one golden-yellow and the other cobalt-blue. The famous twin star, lettered *Gamma* in *Andromeda*, is also gold and blue. *Arcturus*, the brightest member of the constellation *Boötes*, is a fine yellowish object.

There is a purple star close to *61 Cygni*, the distant sun celebrated as being the nearest *Stella orb* to the Solar system.

This diversity of hue is now generally regarded as a rough indication of the relative ages of each class of star.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the seven questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London; E.C. The prize this week is awarded to Charles Trice, 16, Vicarage Road, Camberwell, S.E.

Explain the difference between laughing and crying.

In laughing the air is expelled from the chest in quick gusts, but there is not between the expirations a complete closure of the glottis or windpipe. When the latter takes place the laughing develops into coughing. Crying differs from laughing almost solely in that the intervals between the expirations are longer. In children and others, laughing and crying very often go on together. The difference is due rather to the emotions that cause them than to the manner in which they are produced.

What is the value to the whale of the large development of oily matter which it has about its head?

The value is a double one. In the first place the blubber or fat beneath the skin is a protection against cold. Like fur, hair, and feathers on other creatures, the oil is a non-conductor of heat and serves the same purposes as these additions to other animals. Then by the large development of oily matter about the head, that part of the body is rendered lighter than the rest, and by a very slight exertion on the part of the whale it can bring its head to the surface to breathe the air which it requires.

Why are feathers fastened to the ends of arrows?

The greater friction of the atmosphere acting upon the arrows, opposes the progress of that part of the arrow in a greater degree than it does the other portion. The result is that the point of the arrow is kept forward and in a straight line with its opposite extremity. If the arrow were shot the reverse way from the bow it would turn round in the course of its flight in consequence of the friction of the air offering greater resistance to the progress of the feathered end.

What English nobleman first made experiments to show the expansive power of steam?

Edward Somerset, Marquis of Worcester, born about 1601 and died 1667, was the first English nobleman who experimented with the expansive power of steam. He was imprisoned in the Tower, 1652-55, for espousing the Royalist cause. On his release he went into retirement, and in 1663 published a book entitled "A Century of the Names and Scantlings of Inventions, etc." In this work he gives in number sixty-eight of the list, "An admirable and most forcible way to draw up water by means of fire." His description shows plainly that he had invented what must be regarded as the first practical

steam engine. It appears further from the diary of Cosmo, grand-duke of Tuscany, that a machine constructed by the marquis was in use at Vauxhall in 1656, for supplying the city with water. His first experiment had been to fill a cannon three-quarters full of water, stop up the mouth and touch-hole, and make a good fire beneath it. After twenty-four hours it burst. The marquis then constructed a machine which forced up water by the power of steam to a height of forty feet.

Why are caverns and grottoes famous for their echoes, and why do not the walls of an ordinary room serve equally well for the purpose?

Caverns and grottoes are famous for their echoes because the sound waves cannot travel freely forward, but are driven back again from the sides. The walls of an ordinary room do not serve equally well because sound travels with such velocity that the echo is blended with the original sound, and the two produce but one impression on the ear.

Why does a person carrying a weight on his back stoop?

Because he must get the centre of gravity of himself and the weight combined directly over the base—his feet. For anything to remain stable the law is that the centre of gravity must be directly over the base. If it is outside, the thing falls to a fresh base. Hence though a man alone can stand upright, as soon as he gets a weight upon his back, the centre of gravity changes and he bends forward to adapt himself to the new conditions.

Why can a person skate rapidly over thin ice that would not support his weight if he moved slowly?

When a body is at rest, its mass acts vertically downward; but when it is moving horizontally, part of its mass is employed in propelling itself forward. Thus if the skater weigh, say, ten stone, when he is moving slowly he presses on the ice with a weight of about nine stone; but if he is moving rapidly, his pressure on the ice will be only about five or six stone, according to the rate at which he moves. So we see that ice which could support, say seven stone, would support him whilst in rapid motion but not otherwise.

Why it is an egg cannot be easily broken by pressure on the ends between the palms of the hands with fingers locked? Is there an authentic case on record where it has been done?

How does a cat purr?

Why does a banana skin produce musical sounds like the singing of a kettle while being burnt?

Why is a musical instrument "flat" when the strings are slack?

Why are the chimneys of manufactories built so high?

Why does whale oil possess such a disagreeable odour?

When was gunpowder first applied to purposes of mining?

EVERY READER WHO WANTS TO BUY OR SELL ANYTHING SHOULD TRY OUR SALE & EXCHANGE.

(See Back Cover.)

Week's Wild Life in Pictures.

(See next page.)

THE moschatel (1) is a small herbaceous plant with a creeping root-stock and ternate leaves on four-angled stems, which rarely exceed six inches in height. It bears in spring tiny heads of yellow green flowers, and has a musky odour. In damp hedgebanks among tree roots it is not uncommon. Until recently it was classed with ivy (*Araliaceæ*), but it is now placed along with elder and honeysuckle. The famous ginseng, which the Chinese say has the power to make old men young, is very like the moschatel.

2. The curlew stands out as quite a giant among his relatives, the sandpipers, but anyone could tell that the four big mottled eggs his mate lays were the produce of a bird of that group—so uniform in many cases are family characters in eggs. In the breeding season the curlews leave the marshes and become, in the words of the poet, "plaintive creatures that pity themselves on moorlands"—not but what the "whaups" are as cheerful as any other birds, in spite of their beautiful melancholy whistle.

3. It is not often that the hedge-sparrow patronises the yew, but it is not hard to please with a nesting-site, although avoiding artificial ones, and adhering to something or other in the form of a bush. "Sparrow" it is not; but "hedge" is a most appropriate part of the name.

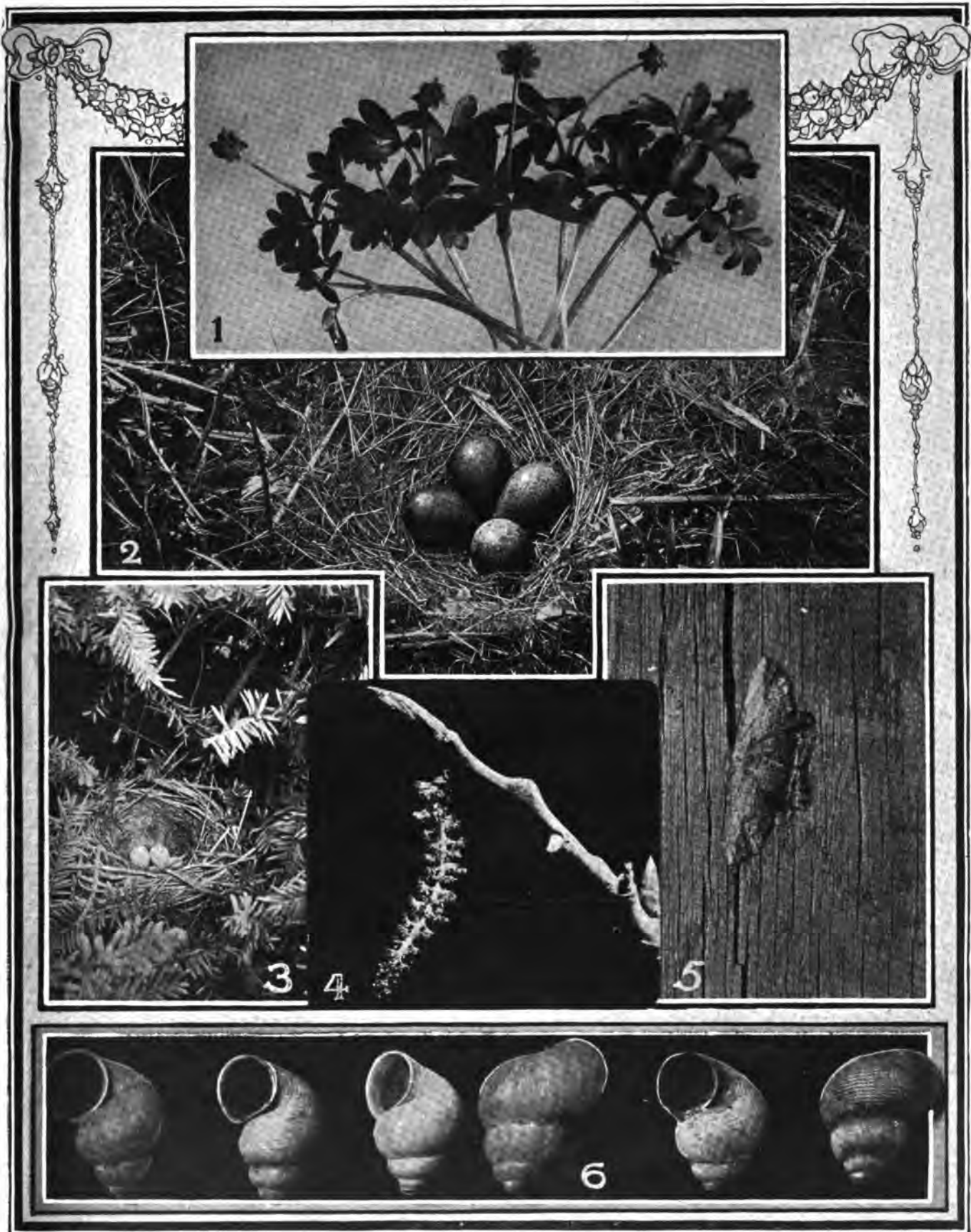
4. The Lombardy or fastigate poplar is a seedling sport from the black poplar, and it is nearly always male. There is no more useful tree, as it grows quickly, is not particular with respect to soil or position, and it is always effective in the landscape. Its resemblance in habit to some of the cypresses has led to its being called the cypress poplar. In Continental countries, particularly Germany and Holland, it is very common as a street tree.

5. The waved umber moth, which is one of the most conspicuous of the early geometers, furnishes an excellent example of the limitations of instinct. The moth, both in its larva and imago stage, is admirably protected by resemblance to its surroundings, the caterpillar, which is of the "stick" type, being very difficult to distinguish from the twigs of the tree—frequently rose or lilac—on which it feeds, and the moth, with its broad wings curiously marked and grained in various shades of brown, being almost invisible when sitting on a suitable branch or trunk. Unfortunately, instinct does not tell an insect what particular background is suitable, and, amid the surroundings of civilization, the moth chooses the most inappropriate places for its resting spots.

6. One of the most beautiful shells that we find in England is that of the *Cyclostoma elegans*. This snail especially loves the chalk districts, but it has been noted as far north as Yorkshire among loose stones, on shelving banks and hedgerows. It is an extremely timid mollusc, retreating within its shell upon the slightest touch. During the winter it buries itself in the ground with the aid of its strong snout. The shell is somewhat solid, and it has numerous strong, closely-set ridges, the intervening spaces having finer and still more numerous ribs. These give the surface a beautiful reticulated appearance.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 344.)



1. Common Moschatel, *Adoxa moschatellina* (E. J. Castle). 2. Nest and Eggs of Curlew, *Numenius arquata* (D. Legard). 3. Nest of Hedge-Sparrow, *Accentor modularis*, in yew tree (J. Atkinson). 4. Caterpillar of Lombardy Poplar, *Populus fastigiata* (G. Parkin). 5. Waved Umber Moth, *Hemerophila abruptaria* (J. Haselden). 6. *Cylostoma Elegans* (J. C. Varty Smith).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, APRIL 27, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

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In Spring on the Broads.

By The REV. M. C. H. BIRD.

IN addition to the constant attractiveness of the Broads to naturalists in consequence of the local rarities of fauna and flora which may regularly be met with hereabouts from one year's end to another, there is, at the season of spring and autumn migration, the glorious chance of someone or other of the rarer casual visitors on the British bird list—such as the avocet, spoonbill or white-winged black tern—putting in an appearance here on the same day as yourself.

I know two or three men who have thus been unexpectedly fortunate upon their one and only visit to these waters. One friend came down to see the bearded tit at home, and made close acquaintance with two white-eyed pochards in addition; another man, whilst on fishing intent, had a purple gallinule pointed out to him within a few yards of his boat.

The Rev. Theodore Wood, whilst beetle hunting, captured an edible frog, and O. J. Lee whilst down here to photograph a harrier's nest, stumbled upon the only common sandpiper's eggs that have been found in the district for years. The rare marsh gentian and two leaved liparis were accidentally re-discovered in the neighbourhood by August sportsmen intent upon flapper shooting; such is the glorious uncertainty connected with sport and natural history, especially in this far-famed region.

Sometimes the unexpected happens, even at local clerical meetings, for at the breaking up of one such solemn gathering, several brethren were once admiringly beholding a flower bed, when out before them appeared a natterjack toad! To quote one other instance, and I could enumerate several more—upon the only occasion on which I ever saw an adult male smew alive, I had a friend with me who had never been on the Broad before, but had had previous experience with this lovely bird in foreign climes.

Although only about a couple of miles, as the crow flies, from those sea-coast sandhills upon which you see the sun shining to the Eastward, we are some twenty miles from the sea by water, and yet the surface of our driest marshes is only a few inches above sea level, which accounts for the sluggishness of our rivers on the one hand, and the necessity of maintaining the aforesaid sandhills (our only barrier against the German Ocean) on the other; for which purpose the whole triangle of low lying country from Happisburgh and Yarmouth to Norwich is rateable.

When wheat was worth about double what it is to-day, many of the now roughest marshes were used for growing it, which fact accounts for the solidity of the chalk and flint based earth walls around Hickling Broad, for the Broads are the natural reservoirs for the rainfall of the district, and this when headed up by high tides at the mouth of the Yare would soon flood the surrounding marshes, were it not for such a barrier as we see before us. But what was that small wader which crept mouse-like over the wall towards us just this moment?

Yes, it is a reeve—and then, never more than three or four in sight together upon our side of the wall, no less than eight ruffs appeared, incessantly in motion, picking up small crustaceans from the edge of the broad, and then cheyving one another and feeding restlessly again; no two exactly alike, and not one with its "show" quite fully developed, nor was the bib of any one so very conspicuously coloured in red, or white, or yellow, as we have seen in mounted specimens, but various shades of grey and black, more or less barred and striped with white. Standing more erect and much higher on the leg than the reeve, her suitors seemed to take no notice of her other than to follow where she led. They toyed a little now and then amongst themselves, and drew guard at one another, but we saw no actual attempt at sparring; and then in a few moments they were gone, not frightened by ourselves, but at a low-drawn signal from the reeve. They rose simultaneously, flying almost straight towards us, passing our boat within a few short yards. And now that they have gone we may as well creep out and peep cautiously over the wall, and see whether there are any good old cock widgeon amongst the whew-ing congregation whose flutelike notes have already reached us. Yes—there sitting alone in the middle of the open water a more dainty specimen 'tis impossible to conceive within any glazen museum case, for there you cannot get the direct sunlight to play upon the plumage, and death makes the bloom fade from breast and neck which are now so delicately beautiful. Catching sight of us, this wary old sentinel gives warning to his fellows, when some five-and-twenty of his congeners rise without much spluttering from the rush-clad margins of the pool, and, warned by them of danger, four common teal hurl themselves like rockets into the air, and the whole marsh seems to be alive. A pair of garganey—bulking rather larger than their commoner cousins to the practised eye—three or four pure white-breasted shoveller drakes, an old mallard or two, mixed up with numerous plovers and redlegs, vacate their resting places; and after wheeling round a bit the congregation, having soon sorted themselves according to their kind, disperse over the surrounding marshes and reed grounds, the mallard alighting on the open water, the teal returning shortly to within a few yards of where we flushed them. We must not land and search for eggs, as the afternoon is slipping away, and half a mile off, on Greenholes hover, Nudd thinks that he will be able to show us a rendezvous of the bearded tit, or "reed pheasant."

That was not the grunt of a hedgehog that you heard just now from amongst the bulrush stems, but the "sharming" of a water-rail, as the love-note of this bird, more often heard than seen, is locally called; a noise as little likely you might think to issue from the throat of a bird, as the "clicketing" of a courting snipe, or the cricket-like reel of the ventriloquial grasshopper warbler.

Now use your glasses and scan the reedy horizon. Look! There is the very chap that we are in search of, perched prospectingly upon the tallest stem in the reed bush, showing off his clear-cut black moustachios, tawny back and tail, and delicate tit-like shape and attitude to perfection, silhouetted as he is against the azure sky.

Somewhere near and below him, close down to the base of the reed stems, will be the object of our search; only be careful of your hands in pulling apart the undergrowth, because that particular rush clump (*Cladium mariscus*) which you are engaged upon is not only a very likely place for you to find the nest, but the edges of the leaves of the plant are armed with tiny silica-fortified serrations, which soon cut through the skin, and the wounds therefrom smart sady and take long to heal. And so at last you have penetrated to the very home of the bearded tit—its actual whereabouts betrayed by the hen bird having slipped off its newly-hatched young almost between your fingers! Five nestlings and an addled egg, which latter you can empty with your blow-pipe later on, and retain in memory of to-day, but do not think that you were the first human discoverer of that snug nursery, for those three adjacent reeds, roughly tied into a knot, are the mark of someone who has been here before you, and would probably have pointed out the nest itself to you some moments since, had he not thought 'twould give you increased joy to find it for yourself; and so it was that he proclaimed beforehand only a rough idea of its whereabouts, and contented himself with giving you practical demonstrations in the art of nest-hunting at a little distance from the knotted reedstems, leaving you free range to apply his lessons in your own search at the crucial spot!

The Microscope.

Sea Cucumbers and Ferns of Silver.

By A. H. WILLIAMS.

THE sea-cucumbers (Holothuriæ) are not so frequently met with in British waters as the species referred to last week. They are more common on the shores of the Mediterranean, and also in the China Seas. In China, as the "Trepanny," it is an important article of diet with the natives of that country. Its English title conveys an idea of the form of this curious creature—with the addition of a crown of retractile tenacles at one extremity. To the microscopist they are interesting, because of the singular particles that are enclosed within their integument.



Photo] W. Raghaw. T.
Specimens of Synapta.

Observe the likeness in shape to anchors.

In one variety, the Synapta, these take the form of anchors and shields, or plates, and in their natural position each of the former is attached by its shank to a corresponding process in the plate, and in such a way that the flukes of the anchor are extended. The accompanying picture shows both of these very clearly.

There are several varieties of Synapta, and all have these curious anchors and shields, but both vary somewhat with the variety. Under the microscope these show splendidly with dark ground illumination, as pictured in the illustration.

A not very distant relative of the Synapta is known as the Chirodata. The skin of this, in place of anchors and plates, secretes forms that are perfect wheels, each with four, five, or six spokes, and with the inner edge of the circle cut into teeth of exceeding delicacy.

There are many microscopists who cannot claim an acquaintance with arborescent silver, the forms of which prompt the fancy to compare them with trees and ferns.

Even those who are familiar with the substance are not aware of the ease with which these beautiful forms may be prepared, and it may add to the pleasure of many if we give a little space to a description of the process.

From the chemist procure threepennyworth of crystals of nitrate of silver, and these dissolve in two or three drachms of distilled water. Then place a few drops of the solution on a disc of black paper, half or three-quarters of an inch in diameter; if within a cell of vulcanite, on a glass slip, so much the better. In the fluid place a small piece of thin brass wire and watch for developments.

Very soon the process of crystallisation will be seen commencing at the wire, and as it is watched its growth—branch after branch and leaf after leaf—will be seen in its beauty. A little experience at this will soon make the microscopist expert at producing slides of this "arborescent silver," which, to produce the best effects, should not be allowed to crystallise too heavily.

Profitable Bee-Keeping.

(Continued from page 339.)

new sections on each stock in readiness for the heather, so as to have pure heather honey, and not mixed.

"The bees went away on August 8th to Gettsdale Fells—heather all round for miles. I reckon it costs me 3s. a hive to take them to the moors—that is, the hire of horse and cart and 1s. a hive to a caretaker on the Fells. Hundreds of hives he looks after and sees that none are stolen.

"My bees were a month away. When I opened them out I found I had 252 lbs. of splendid heather honey, for I had double sections on some of the hives. I made a nice little bit of money over it, though I sold it wholesale here at 8d. a pound flower honey and 1s. a pound heather honey. I reckon the average yearly profit is about £5, but I have made £10 profit. The largest profit I ever made was in 1893, when I made £2 10s. on each hive. Heather honey has fetched from 2s. to 4s. a pound in past years in the London market. Two or three stocks are generally weak, and bring down your average for the season; but, carefully fed and tended, they are often your best stocks the following year. If you are good to them they are good to you.

"With the heather honey the season is over. I then feed heavily any weak stocks. Now I have as many hives as I want I try to keep them from swarming. That is why I put on my sections early, as with plenty of room bees don't get so hot and restless. A late swarm is no good, and we generally put them back into the old hive, first killing the queen.

"One doesn't often hear of April swarms, but a May one is no end valuable. Some folks make a lot by selling swarms. 15s., 21s., and even 30s. is given for good strong ones early in the season."

The Latest Notes from the Zoo.

By Frank Finn, B.A., F.Z.S.

A SPECIMEN of the Malayan tapir (*Tapirus indicus*) has just been received, and is a very welcome addition, as this species has not been represented in the collection of late years, though the common American species is constantly on view.

The Malayan tapir has a very different colouration from the brown American forms, being black on the head, forequarters, and limbs, with the body mostly white, a pattern which would be remarkable enough in any animal. The young of all the tapirs, however, have much the same colouration, being adorned with numerous pale markings on a dark background; they have an absurdly quaint appearance, looking like a painted toy animal.

Two very quaint little creatures are the dwarf lemurs (*Microcebus Smithi*) of Madagascar, which live in a glass case in the insect house. They are the smallest of the monkey order, being much less in size than rats, and in the colour of their fur and style of tail resemble dormice. They are very active, and in the wild state live in the tops of high trees, feeding on fruit and insects, and building nests like birds. Although so tiny, they are fierce, and will spring a foot high to attack their keeper.

The young one-humped camel is finding that its days of thoughtless childhood are over, as it is being broken in to do the usual carrying work; it does not seem to enjoy the process, but is no doubt better off in the hands of the Zoo keepers than it would be in those of its more usual masters, the Arabs.

A very promising pair of infants are the young ravens, now in the care of the keeper of the western aviary, and they have a very remarkable appearance; imagine a young jackdaw magnified to the size of a fowl, and you can form an idea of a young raven, if you have not seen one. Like the young of the crows generally, they have bluish eyes, and the inside of the mouth red, instead of black.

Speaking of crows, the Indian crows, which live in the big aviary along with the gulls and herons, are nesting; it is a curious fact that this species, although so much at home in captivity as to attempt breeding, seems never to display in that state the superlative cunning and impudence so characteristic of it when wild. Other birds of the crow tribe seem to

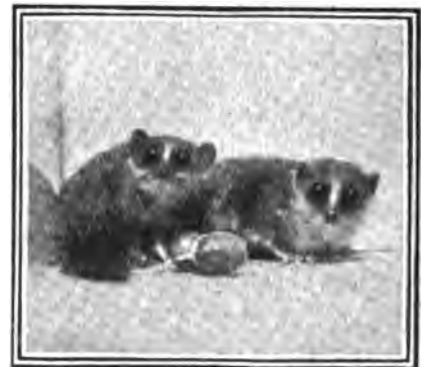


Photo.] W. S. Berridge, F.Z.S.

Dwarf Lemurs at the Zoo.

Compare these smallest of the monkey tribe with the Grapes in front.

act up to their character even in captivity, so that it is the more strange that this species, of all of them the most closely associated with man, should behave like this.

Several foreign species of crows can be seen in the outside cages of the new bird house, next door to the monkey house, which bird house, by the way, is now stocked and open to the public, who greatly appreciate the privilege of studying so many beautiful birds away from their former associates, the parrots.

Amateur Photography.

On Toning Bromide Prints.

By ANTHONY J. PRESTON.

IN a recent article (see THE COUNTRY-SIDE, March 9th, 1907) we went over the process of making bromide prints, discussing the exposure, development, and fixation of the paper. I want now to discuss with you the operation of toning the prints, and I think you will agree with me, when you have tried the following processes, in saying that if the production of bromide prints is an easy matter, the after treatment of toning is no more difficult.

In the first place it must be understood that bromide prints are toned after the final washing, and not like P.O.P. before fixing. There are a great many processes in use for the production of various tones on bromide prints, but it is my intention to treat only of the most important and most widely used. The prints to be toned should be good, well fixed and washed, and possess plenty of contrast. A flat print usually looks worse when toned than in the black and white state.

Preferably, toning should take place before the prints are trimmed, so that if the edges of the paper suffer at all it will not be of any consequence, moreover, the paper can be safely handled by those parts outside the picture.

The whole operation of toning can be conducted in broad daylight, as the silver image, having been fixed, the light can have no further action on it. At the same time it is not advisable to tone in direct sunlight, because the alteration of the tone is so gradual, one colour turning into another by such short steps, that it is difficult to judge the appearance of the tone at any given stage, if the operation is being conducted in too strong a light.

It is also somewhat difficult to follow the changes of colour when working in a yellow light; such as, for instance, that given by a paraffin lamp. Incandescent gas light is perhaps the most serviceable artificial light, but it is always better if possible to conduct the process by daylight.

As in printing, so in toning, everything must be got ready beforehand. The dishes and measures must have a good scour out so that there is no trace of developer or hypo stain left in them; the solutions must be made up and every trace of the chemicals must be carefully washed from the hands.

A very useful commodity in the dark-room for cleaning dishes is powdered pumice stone, and may be obtained from any chemist and at most oil shops. A little of the powder is taken up on a piece of wet rag or cotton wool and rubbed on the dish, which should afterwards be well rinsed under the tap. "Monkey Brand" is also an excellent thing for this purpose. If the stain resists the application of both these preparations a little neat spirits of salts will generally overcome the difficulty. If a dish is so badly stained that nothing will clean it don't use it for toning or it will be very likely to set up some chemical action with the toning solutions and spoil the prints.

THE FERGUSON PROCESS.

To work this process two solutions are necessary.

No. 1.

Copper Sulphate ...	30 grains
Neutral Citrate of Potash	120 grains
Water ...	19 ounces.

No. 2.

Potassium Ferricyanide ...	25 grains
Potassium Citrate ...	120 grains
Water ...	10 ounces.

Equal parts of these solutions are taken, mixed together and shaken or stirred up, and the print, when if dry, must be immersed in water until quite limp, is plunged bodily into the mixture.

Toning takes place fairly rapidly, and commencing with a warm black, changes to various shades of purple, brown, and brownish red until finally it reaches a brick red tone, similar in appearance to that obtained by carbon printing on a red chalk tissue. The print should be taken out once or twice during the process, and examined as it is rather a difficult matter to judge the tone when the print is covered by the somewhat muddy solution.

If the toning takes place too quickly, the bath may be diluted with water, this dilution is also necessary if the tone is not required to go further than the warm black stage. Of course, the more water added to the bath the slower it will work, but it is not advisable to dilute to more than twice its original volume; that is to say, one ounce of No. 1, one ounce of No. 2, and add two ounces of water. Bromide prints which have a rusty or greenish appearance can be quickly toned up in this dilute bath to a very pleasing warm black.

The red chalk tone usually takes about six or seven minutes to obtain, using the bath as given in the formula without further dilution. When the print is toned sufficiently it must be washed in running water for about twenty minutes and dried. This toning bath will be found to give the high lights; i.e., the white parts of the print, a slight tint which, although it is impossible to wash out, is by no means disagreeable. This process is not suitable for glossy bromide paper.

THE URANIUM PROCESS.

There is probably no other toning process capable of giving such beautiful effects as the uranium toning process. Commencing with a warm black, the colour gradually passes from cold to warm sepias and browns to a bright Bartolozzi red. Any colour is most easily produced by arresting the action of the toning solution at the particular point at which the tone reaches that colour.

There is one grave accusation made against the process and that is lack of permanence. The chemistry of the process is very complicated, and I have had a batch of prints toned with uranium, some of which after a few months have lost considerable colour, whilst others have

remained in all their original beauty for years.

I shall have a little more to say later on with regard to the permanence of toned bromides and the remedy for fading, but so far as the uranium process is concerned, unless the prints are required to be kept as records, the beautiful results so easily obtained, atone in a great measure for the lack of permanence of the image. The following solutions are necessary:—

No. 1.

Uranium Nitrate ...	50 grains
Glacial Acetic Acid ...	1 ounce
Water ...	20 ounces.

No. 2.

Potassium Ferricyanide ...	50 grains
Glacial Acetic Acid ...	1 ounce
Water ...	20 ounces.

Some workers make this toner in one solution instead of two, but as, when the solutions are mixed together, chemical action immediately commences, and the bath is likely to deposit, it is always better to make two solutions and mix them as required. For use then, take equal parts of No. 1 and No. 2, and immerse the print, which should be soaking wet, in the bath.

Toning commences at once, and when the desired colour is reached, the print is taken out and plunged directly into a dish of clean cold water. When using this bath do not wash the prints in running water, but immerse them in a dish of still water. In a few minutes the water will have become discoloured and must be changed, and this washing in still water must go on until (and no longer than) the white parts of the print lose the colour imparted by the toning solution.

There is one great advantage with this bath and that is if the tone is found to be unsatisfactory, it can be entirely removed by immersing the print in a weak alkali bath. Take a piece of common washing soda about the size of a hazel nut, and dissolve it in about half a pint of water, put it into a dish and immerse the print, when the tone will almost immediately disappear, leaving the original black and white bromide image, which, after a thorough washing, may be again toned to the desired colour.

This soda solution is also very useful for cleaning dishes and measures which have become stained through prolonged contact with uranium, a rinse with soda and a wash under the tap being all that is necessary to remove the most obstinate-looking marks.

In a future issue particulars will be given for obtaining different colour tones.

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the April competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Camera," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Live-Stock for Profit and Pleasure.

POULTRY.

Seasonable Chicken Notes.

By "CHANTICLEER."

PREVIOUS chapters have dealt with the first weeks of chickenhood. I shall, therefore, pass to the period when they are able to look after themselves, without the assistance of the hen.

It is unwise to allow the hen to brood her young after the fourth week, during the summer months, for many reasons, the chief being the detriment of the comb, especially in the Mediterranean or single combs, as the heat of the hen makes the combs shoot too rapidly, and the pressure of her body at this stage causes the comb to bend over on the beak.

Much depends upon the attention given to chickens during the first three months of their existence, the most critical period being from the time they change their coats of down for feathers, until they are about three or four months. No amount of after treatment will compensate for neglect and inattention during this time, and it is doubtless due to the disregard of this important law of Nature that we see so many undersized, weakly-looking specimens of the poultry-tribe in our yards and runs, birds that will never pay for their corn bill, let alone give their owners a profit.

It is well to regulate the feeding according to the ages of the birds. Young chickens a month old should have four good meals a day, two of soft food before mid-day, and two of small corn in the afternoon. Do not give more than can be eaten up at the one meal, and above all, give good nutritive food.

After a long experience, I believe Spratt's patent chicken meal the best and the cheapest, especially if the food is properly prepared, for if mixed with boiling water, covered up and allowed to stand for half an hour, it largely increases in bulk and is very easily digested. It should be dried off with sharps or middlings, whilst, where size is an essential (in heavy breeds), I advise Sussex ground oats. Such excellent food cannot fail to benefit young growing stock.

A mid-day meal of finely chopped succulent green food is important, and here we have a large variety to select from. However, I shall select dandelion leaves and the green tops of onions, both of which act beneficially on the chickens' systems, are excellent tonics and will keep them free from feverish conditions. I would add that poultrykeepers find that the young birds regularly feed on onion tops—either given separately or mixed in the soft food—are seldom attacked with insect pests. For the last two feeds of the day, dry chick food is the best, especially when scattered in chaff or loose litter so that the young birds have to exercise themselves to find it.

A splendid mixture of small seeds and dried insects is Chikko, which for many years has been extensively used by all suc-

cessful chicken breeders. An examination of this unique dry chick food will quickly prove its suitability for growing chickens, and the care that has been taken to include all the most nutritive seeds and crushed grains.

Cut clover is considered to be a very valuable food for young chicks as well as adult fowls, and deserves to be more extensively used as it contains more sulphur, nitrogen, phosphates, and more mineral matter in all forms than grain, and is certainly cheaper. It should be chopped up into short lengths, scalded at night-time, and mixed with sharps in the morning soft food.

During the summer months one of the chief causes of sickness is undoubtedly sun-warmed water, and all poultry-keepers should be careful to see that the water vessel is placed in a well shaded spot away from the sun's rays. Many diseases are attributable to neglect in this respect.

The water should be changed as often as possible; and all water vessels turned over the last thing at night, as in the morning the young stock, after their long night's rest, will make a rush for any description of liquid.

The ground of the runs of young stock should be dug up several times a week to keep it sweet and the top layer removed often and replaced with new soil.

When possible it is well to allow young growing chickens to take possession of newly dug earth or a fresh cut lawn; not only will they clear the ground of objectionable insects, but derive much benefit therefrom.

Chickens should not be allowed to run with older fowl until fully matured. Sometimes when space is limited, this cannot be avoided, and in such cases I advise that a good-sized open crate should be made. This is easily put together by nailing strips of wood firmly together at a distance of about four inches apart to allow for the ingress and egress of chickens when pursued by the larger birds and to enable them to obtain a full share of the food and grain which should be thrown into the crate.

Young chickens, until fully five months old, should not be allowed to roost on perches even when of good width, as it gradually tends to give them crooked breasts and spoils many an otherwise good bird, but by all means give growing stock a comfortable shelter and night house. Cover the floor with straw, moss litter, or even road dust, and if kept from perching until they mature, a decided benefit will be found.

Beware of overcrowding and give all chickens plenty of room. Separate the sexes at the tenth week, and by all means keep the birds of similar ages and sizes together, removing to different runs as often as convenient.

Dust all chicken once a week with Keating's insect powder, sprinkling a little over them after they have retired to the night house.

Do not forget to place a small box of chicken grit in a convenient place as it works wonders with the birds; as like human beings they require teeth to masticate the hard foods given them, and it is the need of grit that causes liver disease and its attendant troubles.

A dust bath should always be given, sifted ashes and sulphur food being placed in a box, thus keeping down vermin which is so prejudicial to health. Lastly, I advise perfect cleanliness in all chicken rearing, as nothing so quickly causes disaster as dirty and unsanitary surroundings. If daily watched and cared for the trouble is not much.

DOGS.

THE Birmingham Collie Show has earned laurels over its exhibition for the good collections of real quality dogs it foregathered. The feature of special interest was the final win of the Moreton Challenge Cup, presented in 1899 by the late collie enthusiast, Mr. Herbert Jones. Mr. H. E. Packwood, the winner of this trophy on four separate occasions was, strange to say, the first, and to his dog Billesley Briton he owes the final win.

The Blue Merles at Birmingham were exceptionally handsome, and the Sables some of the best ever benched.

Dachhunds are again coming into fashion, and these low set, bowlegged dogs may be seen every day in Hyde Park out for an airing.

Mrs. Chapman was the winner of special for best sporting dog in the recent L.K.A. show, and she is greatly delighted that the win was accomplished by her beautiful greyhound, named Broadwater Banker. Mrs. Carlo Clarla won a similar special for best non-sporting with her bulldog Mersham Sheen.

Mrs. H. D. Greene, wife of the famous K.C., has succeeded in establishing a strain in her kennel of toy Welsh terriers, and if it be true, as *Our Dogs* tells us, that these miniatures of the original embody all their excellent traits and characteristics, then the fancy may congratulate Mrs. Greene on adding a new variety to enter the lists of competition.

The discussions of the moment are colour and markings of Dalmatians and the wisdom of disqualifying puppies in weight classes. It is argued in *The Kennel News* by one of its correspondents that a puppy is, or should be, judged as he stands when exhibited, and not as what he will be when fully developed.

**If you want to buy or sell
Poultry, Dogs, Cats, Birds,
etc., try our Sale & Exchange.
See Back Cover.**

CATS.

AMONGST cat fanciers spring is the busiest season of the year. A few remarks on the breeding of Persian cats may come in usefully, especially to novices in the fancy.

In selecting a male cat for stud purposes, it is well to be guided a good deal by the size of head and limbs.

Take note of the width between the ears, which should be nearer three, than two inches. Beware of a long nose and pointed face. Tall ears are most undesirable. It also spoils a cat's appearance if the ears are very wide open at the base. Ear tufts are a great addition to the beauty of a Persian cat.

In wishing to breed good Persian kittens it is very necessary to first consider the points of our female cat. It is not always the most noted sire or the greatest prize winner that is the most desirable mate for a particular queen. We must mate according to the good points in one and the defects in the other, and thus we may attain to something as near perfection as possible.

If the queen is wanting in breadth of skull and shortness of face, try to remedy and counterbalance these defects by finding a stud cat with these points strongly developed. Deep orange eyes which are so much sought after in black and blue Persians, quite as often re-appear in a litter of which one only of the parents has been thus favoured.

Blue Persians should only be mated with blues. If crossed with silvers, the result is not satisfactory, for kittens that are needed for the show pen, as very frequently they will be silver smokes, which, though exceedingly pretty for pets, are of no value from a fancier point of view. Brown tabbies may be mated to orange and also black cats, but a cross with smokes, blues, or white should be avoided.

An orange female can safely be mated to a cream or a blue, and unless a silver is mated to its own colour, then a smoke is the best alternative.

A good rule for novices to follow is always to mate self-coloured cats with selfs, and tabbies with tabbies.

The best time for cats to have their families is from April till June, then the young kittens have all the summer before them and they can enjoy plenty of outdoor air and exercise.

Highly-bred Persian cats should not be allowed to have more than two litters in the year, and it is very important that the family should be in perfect health when sent to a stud cat.

CAGE BIRDS.

Foods for Rearing Young.

IF all has gone on well by the time these notes appear, the first broods of young canaries will be putting in their appearance, so that the present will be an opportune time to say something about the various foods required for rearing them. In the old days of bird-keeping the term various foods would scarcely have been applicable, as, for all practical purposes, there was but one kind of food, consisting of hard-boiled egg and bread crumbs, in vogue for raising young birds; but, of late years, new schools have arisen, with new ideas—some good and wise, some otherwise.

The Old-Fashioned Way.

This method is still by far the commonest in general use, and the only one which the great majority of successful breeders employ. Its general utility has always kept it in the first place, and its nourishing and building-up qualities cannot be denied even by its severest opponents. The food is prepared by boiling a new-laid egg (or eggs) for ten or twelve minutes, and, after allowing it to become cold, take out the yolk and either rub it through a bread-grater or chop it with a knife into a mass of fine crumbs; now add double its bulk of crumbs of stale household bread or powdered biscuit, and well mix all together, when it is ready to give to the birds. A small pinch of maw seed, or soft sugar, may be added if it is found that the birds prefer it, though it is not absolutely necessary.

The Objections to this Method.

There is certainly something to be said for the opponents of the above well-tried food. The objections are based on the fact that hard-boiled egg has been found to be a most powerful medium for the cultivation of septic bacilli, which are the cause of one of the most fatal diseases with which bird-keepers, and canary breeders in particular, have to contend. But this risk can be guarded against and reduced to a minimum by scrupulous cleanliness and attention to hygiene, and never allowing egg food to become stale. The food should always be made in small quantities to last only a few hours, and should be freshly made at least twice a day. By these means, and keeping all the food and water vessels perfectly clean, and the cage floor free from any scraps of stale food, the danger of this fell disease breaking out, except it is introduced with infected birds or cages, is comparatively small.

Other Modes of Feeding.

The nearest approach to the first-named food, which is favoured by those who object to the use of egg, is made by well mixing together one part of preserved yolk of egg and two parts of powdered biscuits—Osborne biscuits or mixed plain biscuits will do very well. This mixture is kept stored in a cold, dry place, and is always ready for use by taking the quantity required and adding a few drops of water to make it just crumbly moist. Do not make it wet or sticky. The old birds eat it readily, as a rule, which is more than can be said of some other foods advised by the anti-egg school. The latter is an important point, as it is easy to see that if the old birds do not care for the food supplied, the young broods, which are only fed on partly-digested food by their parents, are not likely to do very well. In our experience—and we have tested a few of these "no-egg" methods—the birds never seem to quite like these alternative foods. Hemp seed should be slightly crushed and given regularly in a separate vessel whilst there are young ones to feed, and another separate pan of soaked rape is often appreciated. Care should be taken that the latter does not turn sour, which it does very quickly in warm weather. For the latter reason also it should never be mixed with other foods. A preparation of cooked seeds, without husks, may also be obtained, and would be very useful in cases where the birds eat it readily; but we have yet to find the canary that showed any fondness for dried insects and flies, which have also been recommended as pabulum. Good brands of puppy biscuits containing no meat, and, preferably, those containing cod liver oil and malt, scalded until soft and pressed as dry as possible, will give very good results in rearing fine young birds if, again, the parents are fond enough of the mixture to eat it freely. In short, the bird's likes and dislikes have to be consulted in this matter, and they vary as much as we humans do. But many birds are quite fond of the puppy biscuit food; hence the success it often brings. All these foods are for use when young ones are about, and must supplement, not supplant, the usual staple diet of good, sound canary seed.

Answers to Correspondents.

Propagation of Partridges.—No, there is no game bird, or any bird for that matter, that does not propagate in the ordinary way.—(to GAME BIRD.)

Little Owl Found Dead.—The bird that you send, found dead in a hole of a tree, is a little owl (*Athene noctua*), a species which, although an introduced Continental bird, is now common locally. See Mr. Lewin's article in THE COUNTRY-SIDE for April 6th.—(to H. P. BURDETT, Brampton Ash, Market Harboro'.)

Rearing Young Squirrel.—To rear a young squirrel just taken from the nest there is no better plan than that of placing it with a cat that has just had kittens, and let her suckle it. Failing this, give it frequently a little fresh milk, and occasionally milk and Osborne biscuit made into a soppy state.—(to HERBERT VINNICOMBE (Folkestone), DOROTHY NICHOLLS (Kidderminster), and others.)

Grub Identified.—The large white grub with black spots, which you found inside an ash tree when sawing up one of the branches, is the wood leopard grub.—(to W. L. A., Leicester.)

Toads.—When a toad is seen carrying a smaller specimen on its back, this does not denote parental but conjugal relationship. Toads take no interest in their offspring, except, apparently, eating them.—(to SEVERAL CORRESPONDENTS.)

Identification of Ducks.—The pair of ducks you saw at Morecambe Bay on April 2nd with pied plumage and reddish bills, both alike, were common sheldrakes (*Tadorna cornuta*), a well-known sea-coast duck.—(to C. C. CHAMPION.)

B.E.N.A.

Notice.—As members and correspondents are aware, Mr. E. Kay Robinson has had a severe illness, and we trust it will not cause disappointment if one or two matters in which members are interested have to stand over for a little while. As soon as Mr. Robinson is well enough, he will give his attention to these matters.

New Members.—There were enrolled during the past three months the following number of new members:—In January, 86; in February, 119; in March, 95.

Local Secretary.—Any readers in Nottingham who wish to form a branch in that district, should communicate with Mr. A. Brown, 27, Hunger Hill Road.

Seed Distribution.—Mr. A. Holmes Baker, hon. sec. for Tunbridge Wells and District, will be pleased to receive immediately all the wild flower seeds which any members have to spare in order to distribute them to applicants. Mr. A. Holmes Baker is arranging the summer programme for his centre, which will consist of a good many excursions around the neighbourhood; the particulars will be announced later.

Appeal for Seeds, etc.—Mr. A. Holmes Baker makes a special appeal to readers for seeds or bulbs (or both) of English orchids, such as fly, man, bee, etc., for the Tunbridge Wells district, where they are almost extinct; he wants to make them again a familiar object around the Wells.

Gifts of Plants.—Miss Ashwin, St. Alban's House, Whitchurch Road, Tavistock, will be pleased to supply other members of the B.E.N.A. with sundew and other bog plants, dodder and other moorland plants.

Collection of Alien Plants on View.—MRS. F. BAKER, "East Gable," Parkfield, Lowestoft, will be pleased to show her collection of alien plants to anyone who would care to see it.

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Miscellaneous Announcements.

Advertisements intended for insertion under this heading should be addressed to the Manager, "Country-Side," 2 & 4, Tudor Street, E.C. The scale of charges is one penny per word, and all advertisements must be accompanied by a cheque or postal order crossed " & Co."

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Birds' Eggs.

Birds' Eggs, lowest prices. List 1d.—E. R. Skinner, St. Mary Cray, Kent.

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To be Sold, Old-established, High-class, Provincial Natural History Business; good working stock to be taken to; satisfactory reasons given for disposal.—Address, "Business," c/o "Country-Side."

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Books on Sport: Horses and Dogs, Natural History, Farming, Games, etc. Catalogues free.—The Great Bookshop, Birmingham.

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Entomology.

Largest Butterfly Farm in England. Ova, Emperor, 4d. doz.; Larvae, Greasy Fritillary, 1s. 6d. doz. Postage, 2d. Breeding Cages, 2s. Lists Stamp.—Newman, Bexley, Kent.

Cocoons, Handsome American Silkworm, 6 inches across wings, 3 1s., 3s. 6d. dozen, emerge shortly; Tropical Butterflies in papers from 4s. 10s.; Nature Study Cases; lists stamp.—Ford, Irving Road, Bournemouth.

White Admiral Larvae, 2s. 2d. dozen; most fascinating to rear. Spring List ready.—Morris, Entomologist, Brockenhurst, New Forest.

Miscellaneous Announcements continued on page v.

DOLLOND



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What is it?—Result for March 30th.

Very varied solutions were given to our What Is It? of March 30th. Hundreds of readers thought the seven globular objects shown were the eggs of some insect, and many specified the particular insect—as ant, slug, etc. Then a large number of competitors gave pin's heads as their solution, some specifying white hat pins, toilet pins, etc. Another favourite solution was "hundreds and thousands," the tiny sweets beloved of small children. Amongst other solutions suggested were potatoes,

new and old, raw, boiled and baked, various parts of a golf ball, inside and out, section of a wire rope, eyes of a codfish and herring, eggs from the hard roe of a herring, particles of mutton fat, young mushrooms and puff balls, and prunella balls from a smelling bottle. One reader sent a photograph of the latter to support his solution, but unfortunately he was wrong, as were those who sent the other answers that have been mentioned. Then came a number of readers who were nearer the true solution, and thought the round objects were some such substance as pearl barley or semolina. Nearer still were those whose answer was "tapioca" or "sago," and, in fact, they were so far correct, but as there are several kinds of tapioca and sago, the mere name was not sufficient. The true solution was "seed pearl tapioca," often called by grocers "small sago," and no fewer than sixty-nine readers having sent in this answer the £2 prize money has been equally divided, and each will receive sevenpence as his or her share. Many unsuccessful competitors came very near to the correct solution. Some said "pearl tapioca," but as there is a medium as well as small, or seed, pearl tapioca, this was not sufficiently explicit. Those who gave "medium" and "large" and "bullet" tapioca or sago, were, of course, wrong. "Seed pearl tapioca" being called by grocers "small or fine sago," either solution has been accepted as correct.



Enlarged grains of seed pearl tapioca or fine sago.



The seed pearl tapioca or fine sago which was photographed.

On page iii. of this issue will be found full particulars as to the solution and prize award of the "What Is It?" competition of April 6th. Another problem appears on the front cover of the present issue, to which we would direct readers' attention, and ask them to show these interesting competitions to their friends.

The Garden.

Work for the Week.

Strawberries.

It is now getting near the time when a mulch must be provided. This is to save the coming fruit-crop from the disastrous mud bath consequent upon heavy rain, and, moreover, it will keep the ground moist and help to nourish the plants. Before mulching, the beds must be hoed clean, and it is as well to diminish the slugs by setting traps of slices of turnip, etc., while the dressing of the soil with freshly slaked lime is also to be recommended.

Long straw stable manure from which the droppings have been shaken out is the ideal material for an early mulch, and, as rain converts them into a slimy mess, lawn mowings are to be avoided.

If strawberries are forced it will be well to remove the flower-trusses from a few plants to provide extra good runners for next season's requirements, and profitable outdoor beds may be made of plants that have been forced.

Where good facilities for watering exist it will be well to remember that strawberries and raspberries may be greatly benefited by copious applications in dry weather. Keeping the soil uniformly moist above the roots of plants at this season has a wonderfully marked effect upon the character of the crop which will be obtained later.

The Perpetual Fruiting kinds.

So called because a plantation will yield fruit at intervals throughout the summer and until the end of November under glass, this new race continues to gain in favour. It is the outcome of crosses between the large-fruited kinds and the Alpine strawberry, and the excellent varieties that have been raised on the Continent will be extensively grown in this country as soon as their cultivation is more generally understood. They should be planted two and a half feet apart each way, and it must be remembered that the successional crops are borne upon the runners of the current season. St. Joseph and St. Anthony of Padua are two good kinds, and August Queen is said to be the best of this season's varieties.

Nets.

The birds render these practically indispensable to the gardener, and it will be well to examine the stock with a view to being able to meet coming requirements.

Several firms make a speciality of the supply of old fish nets; those made with a square mesh are the best, and particularly if a bed has to be covered, it should be borne in mind that a margin in width must be allowed for.

Nasturtiums, Stocks, and Sunflowers.

Sowings of these favourites made where the plants are intended to flower can be depended upon to afford gratifying returns later on.

As it flowers profusely in the poorest soil for an indefinite period, it would, indeed, be difficult to name a better gardener's friend than is the nasturtium. Greatly improved varieties both of the dwarf and tall sections have lately been produced. We recommend a trial of these, and at the same time a word as to

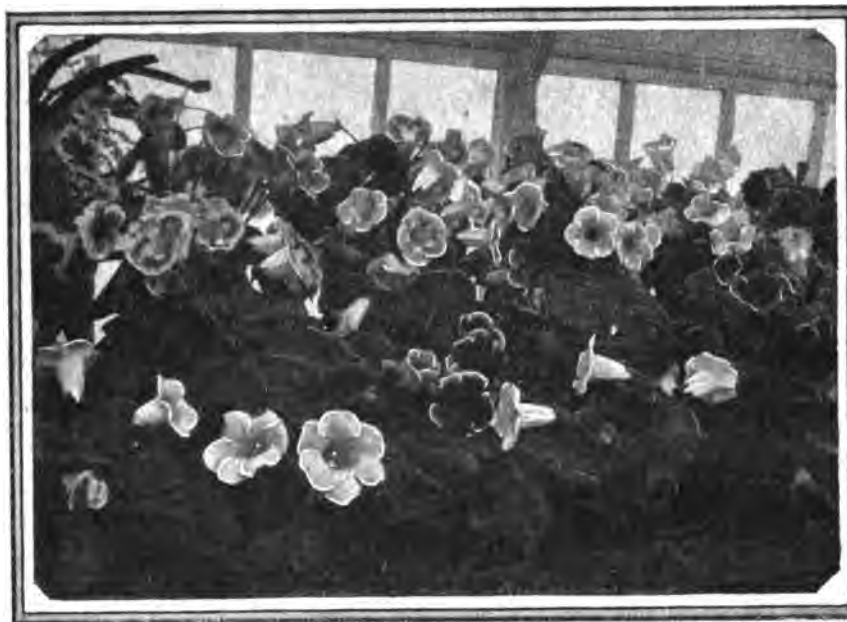


Photo.]

Gloxinias.

[R. Parr.

They are among the most popular of all pot plants for the warm greenhouse.

the merits of the canary creeper for rapidly and effectively covering trellis work, etc., may prove a useful reminder.

Stocks seem to yield but a poor return for a good deal of trouble bestowed upon them in many gardens. A sowing of a good strain of the ten-week varieties made in good soil, and followed by early and severe thinning is, however, a method of cultivation that can be thoroughly recommended.

In common with the pumpkin there is a competitive element about the production of giant sunflowers that appeals strongly to many gardeners. Digging in a liberal supply of decayed manure to a good depth and watering liberally in dry weather are the main points to be observed in the production of extra tall examples of this cheery flower. The considerable range of colour and form in the dwarf and miniature annual sunflowers should certainly be taken advantage of to brighten the flower garden.

Chrysanthemums.

Now is an important time in the culture of these plants. Should they require re-potting it must be promptly attended to, the compost used being not so finely sieved and richer than before. Stopping the shoots and staking must also be attended to. Having been hardened off, chrysanthemums will now do best in a sunny position out-of-doors.

G. F.

Gloxinias.

Very Popular Greenhouse Plants.

GORGEOUS is a very fitting description for such a display of these favourite greenhouse flowers as is illustrated. Indeed, their fleshy leaves, covered with a high bloom and numerous, charmingly-coloured, large, velvety, bell-shaped, nodding flowers endow Gloxinias with such a marvellously well-ordered appearance, that, with begonias, they are the most popular of all pot plants for the warm greenhouse.

The leading seedsmen have evolved very fine strains and named varieties of Gloxinia and, fortunately, these are quite easy of cultivation from seeds, or if very quick results are needed, tubers can be obtained.

Seeds sown in pans of light sandy soil in brisk heat in early spring and grown on vigorously will flower well during the ensuing summer and autumn.

A temperature of 60 degrees, in full light, is the most suitable, and applica-

tions of manure water will be found to prolong the flowering period.

After the plants have flowered, dry off the tubers gradually until the leaves wither, afterwards storing them in dry sand. Gloxinias may also be propagated by leaf cuttings.

Garden Query Answered.

Sticky Covering of Horsechestnut Buds.—

The scale leaves which envelop the buds of the horsechestnut in winter serve to protect the baby leaves and flowers against injury from moisture and cold. To ward off moisture more effectually, they are coated with a resinous exudation, which becomes very sticky when growth is active in spring. All deciduous trees and shrubs and many evergreens have some such provision to serve as protection during the season of rest. It is very marked on the buds of pine trees. The presence of a sticky covering which sometimes traps flies, etc., must not be taken as an indication that the tree is insectivorous.—(to C. H. Ellis.)

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 103. VOL. 4.

MAY 4, 1907.

1d. WEEKLY.

Some Notable Comets.

By NORMAN LATTEY.

WITH the impending return of Halley's famous comet in 1910, a short account of the most conspicuous comets which have appeared within historic times may be interesting.

The ancients regarded comets as mysterious wraiths that paid casual visits to our nocturnal skies, boding no good to the inhabitants of the earth. The object of their coming and going seemed inexplicable. It was generally conceded that they must be "ominous of the wrath of heaven and harbingers of wars and famines." The word comet, derived from the Greek, signifies hair, and the first idea of these terrifying appearances was that of evil spirits with flaming tresses streaming backwards from their heads of fire.

Perhaps the earliest mention of one of these visitations dates back nearly twenty-three centuries. About 400 B.C. the people of Greece were scared by a flaring star which left a fiery train across the sky. Thirty years later a similar apparition heralded the birth of the famous king Mithridates. The soul of Julius Cæsar was generally believed to have been borne away in a cometary chariot, and the divine right of William the Conqueror to invade England was clearly perceived in "a star with three tails." In A.D. 1456 the presence of a "hairy star" spread consternation throughout Europe. The then Pope, Calixtus III., ordered church bells to be rung daily at noon, and additional *Ave Marias* repeated.

Until comparatively recently the malevolent purport of a comet's coming was never doubted, even by the educated. It was left to Sir Isaac Newton to rob them of their terrors. The great comet of A.D. 1680 provided him with an opportunity of applying his newly-discovered law of gravitation, when, lo! the dreaded omen was unmasked and confessed to being merely a harmless vassal paying a customary visit to its feudal lord, the sun. Moreover, Newton was able to show that comets moved in an oval path, or ellipse, like the planets, except that their orbits were considerably more elongated; also

that sometimes they carried this ellipticity too far and swept out into space to such a vast distance that their return either became delayed by thousands of years or rendered utterly impossible. The splendour and swiftness of this comet excited the deepest interest. It was first observed at Coburg as it rushed at the sun in an almost straight line at the breathless velocity of three hundred and seventy miles a second. A tail, many millions of miles in length, was rapidly developed, and the comet only escaped engulfment in the solar globe by reason of the terrific speed with which it swung round that orb.

Hitherto no attempt had been made to

the astonishment of the sceptics, however, the comet duly arrived on Christmas night of the foretold year, true to time after a long journey of over three-quarters of a century! Halley, who had already commenced his last sleep in Lee churchyard sixteen years previously, left a pathetic message behind. He appealed to posterity to remember that it was an Englishman who had first attempted such an unprecedented prediction. In August, 1835, another return took place, and a third, as already mentioned, is expected in 1910, about the month of May.

Bright comets were seen in A.D. 1743, and also about the date of the birth of Napoleon in 1769.

The former was a magnificent sight, and is said to have had six tails. Humanity has probably looked its last on this remarkable object, for its period is placed at over 100,000 years, and who can say what mishaps it may encounter in the meantime? The nineteenth century was almost ushered in by a fine comet in 1811. Discovered on March 26th of that year, its visibility continued for seventeen months, the longest on record. Its tail was of prodigious length, almost spanning the



The Great Comet of 1882.

Its tail was nearly a hundred million miles long.

calculate with any degree of accuracy the return of a comet. It was reserved for the English astronomer Halley to construct the first cometary time-table. Studying the movements of the one in 1680 and drawing his own deductions from Newton's theory, he patiently waited for another appearance. Within two years his chance came, for in A.D. 1682 a second magnificent comet blazed forth in the evening sky. Attentively watching its apparent path among the stars and comparing it with those recorded in A.D. 1066, 1378, 1456, 1532, and 1607, he came to the conclusion that they were successive returns of one and the same comet, and ventured on the bold prediction that this one would return again in seventy-six years. The announcement was naturally received with considerable incredulity, especially when it was borne in mind that Halley would probably be dead before the time and out of reach of ridicule as false prophet. To

heavens. The nucleus, or head, measured 430 miles in diameter, and was surrounded by a nebulous sphere two and a half times the size of the sun.

On February 28th, 1843, another comet suddenly blazed out close to the sun. In Southern Europe it was visible to the naked eye in full daylight. On March 11th it shot out, within twenty-four hours, a bright ray twice its own length, giving it an alarming appearance, and almost producing a panic. On June 2nd, 1858, Dr. Donati, of Florence, espied a wisp of luminosity slowly advancing from the north towards the constellation Leo. There was nothing in its feeble glimmer to give promise of unusual development, but within four months it had grown into a spectacle of celestial splendour, unequalled by any subsequent phenomenon of its kind.

The last striking comet witnessed was that of 1882

Country-Side Notes.

THE FIRST OF MAY.

Now the bright morning star, day's har-
binger,

Comes dancing from the East, and leads
with her

The flow'ry May, who from her green lap
throws

The yellow cowslip, and the pale primrose.

Hail, beauteous May! that dost inspire

Mirth, and youth, and warm desire;

Woods and groves are of thy dressing.

Hill and dale doth boast thy blessing.

Thus we salute thee with our early song,

And welcome thee and wish thee long.

MILTON.

Sent by W. A. Desmond.

HERE is joy when May comes in
with a balmy night, when one can
loiter bareheaded under the stars,
without thought of chill, and listen to
the changing chorus of the life of night.
For from dusk to dawn there is no hour
of silence in the woods and fields, when
spring's tide of life is at the full.

"In the evening, when the coppice was
silhouetted black against the misty
meadows, when the last song-thrush's
song had died away, and the big bat alone
patrolled the upper air, the partridges
still challenged and counter-challenged
across the fields, the brown partridge with
a voice like a creaking gate, and the red-
legged kind crowing in tuneless bars,
'Chik, chik, chikor; chik, chik, chikor.'

"As darkness deepened you heard the
peewit's plaintive cry and whistling wings
of wild duck on their evening flight, while
the jovial 'Hooo-ooo, hoo-hoo-hoo-hoo' of
the food-bringing brown owl was
answered by the glad 'Ke-wick' of his
expectant mate in the wood. Then the
barn-owl 'screeeed' comfortably, as he
sailed on dim, white wings round the dark
farm-buildings; when suddenly, like
liquid pearls of music, the nightingale's
first notes fell into the deep bosom of the
night.

"It is midnight and May, but still the
nightingale is singing and the owls are
calling to their friends. You hear the
splashing and rippling of the water where
the wild duck feed, with a querking
monosyllable now and then, while still the
peewit cries.

"And so to bed, as some wakeful
village rooster clangs out the first notes
of the chorus of returning day."—From
"The Country Day by Day," May 1st.

The question of the heron's capacity for
food, recently raised in THE COUNTRY-
SIDE, is an interesting one. One kept by
the writer was quite satisfied with a daily
allowance of two herrings, which does not
seem an unreasonably large amount for
a bird of the size. This bird, however,
kept as it was in a coach-house, and
regularly fed, would presumably not eat
so much as a wild bird, with its appetite
sharpened by exercise and frequent fast-
ing, might do if it got a good chance.
Our correspondent, who discusses this
question, is quite right in supposing that
herons do not confine themselves to fish;

as in the case he mentions they eat rats,
and also young birds and frogs—but not
toads. These are refused also by the stork,
so well-known as an enemy to frogs.

What some fish-eating birds can eat was
shown the writer some years ago by a
captive goosander on which he had an
opportunity of experimenting. A number
of small fish, about two inches long, were
procured, and offered to the bird one by
one; and it ate no fewer than forty of them
in succession before it was gorged. Such
an opportunity would probably not occur
to a wild bird every day; but it gives one
an idea of what harm these saw-billed
ducks are capable of doing when they get
among trout.

The smaller insectivorous birds are
really quite as greedy as fish-eaters,
though, as the act of gorging large ob-
jects is more conspicuous, the bigger
birds get more credit for gluttony. On
one occasion a common spotted flycatcher
came on board a liner in the Indian Ocean
and was kept till arrival at Colombo by
the writer. The only cage available for
it was one of those awful little six-inch by
four affairs in which linnets are immured
here, so that the bird had little chance of
any exercise. But that its appetite con-
tinued good was evinced by the fact that
it consumed consecutively thirteen of the
small light-brown cockroach (*Ectobia
germanica*) with which the ship swarmed,
and on another occasion twenty-three
house-flies. In the course of another day
it ate about eighty cockroaches and more
than a dozen flies. Another day's allow-
ance was about one hundred flies, and the
bird was ready for more. It was released,
by the way, at Colombo, and although
pursued by the local crows, which infest
the shipping, appeared to be able to avoid
them.

The possibility of birds getting assisted
passages like this is perhaps not suffi-
ciently taken into account by ornithologists.
Too often, no doubt, the wanderers die of
exhaustion, or cannot be suitably fed, but
there are other instances on record of
birds being looked after on board ship
and travelling much greater distances.
At this time of the year and in autumn
any ship is almost certain to encounter
many stray birds at sea, and it is quite a
chance if any of them come under the
notice of a naturalist.

The case of the cockerel which was seen
to swim thirty yards back to shore after
trying unsuccessfully to fly across a river
is very interesting. The present writer
once saw a young peacock do the same
thing, although in that case it only had
a few yards to go; and Audubon long ago
recorded that the wild turkeys in North
America frequently found themselves ob-
liged to finish the passage by swimming
when they had tried to cross a wide river
on the wing. It is well-known, also, that
the pheasant will often swim on occasion;
and the Prince of Wales pheasant

(*Phasianus principalis*), which is now
being introduced into some of our coverts,
is reported habitually to swim and wade
in the wet reed coverts it haunts in its
home on the Bala-Murghat river in
Afghanistan.

These cases are particularly remark-
able, because the family of game—and
poultry—birds have particularly little to
do with water in the natural course of
things; as everybody knows, unlike most
other birds, they do not even wash, but
roll in dust, and none of them, with the
exception, obviously induced by local con-
ditions, of the above Afghan pheasant,
has any tendency to aquatic habits,
although in some other families, like the
rails, one finds every gradation from an
aquatic to a terrestrial species.

There is no doubt, however, that all
poultry-birds are able to swim, although
they are not aware of this latent accom-
plishment, which is evidently given to
them only for use in case of emergency.
The cockerel in question presuming he
could not swim, meant to fly across the
pond; found he was unequal to the task,
dropped on to the water on which he
floated. Then he instinctively tried to
run, and found that he got along famously
—not by running, as he thought, but by
swimming.

A hen in charge of a brood of ducklings
may often be seen in a state of extreme
anguish on its margin when her foster-
children have gone for an indefinite ex-
cursion on a pond. Yet if the hen only
knew it, she could, if she tried, accompany
her family, and in hot weather especially,
there is no reason why she should not
enjoy the unaccustomed luxury of a bath.
A flock of about thirty turkeys, which
were being driven past a pond, took
fright, and before they could be restrained,
the whole lot swam across some five-and-
twenty yards of deep water, and thus
effected a temporary escape.

There will be many people whose gar-
dens fail at this season of the year to give
them a sustained supply of "greens." Try
how you will, unless your garden is
very large, there always seems to be a
"gappy" spell between the last of the
winter green-stuff and the spring cabbage
and spinach, etc. Yet there are several
wild plants which, picked at the right
stage of their growth and carefully
cooked, are not only efficient, but even
superior, as substitutes for garden greens.

Most people are aware that hop-tops
make an excellent dish, as also the tops
of young nettles, whose tonic properties
are enhanced by the formic acid they con-
tain. And the common charlock, the
curse of the British farmer, is not only
undesirably plentiful, but perhaps the best
of edible green-stuff outside one's garden,
though the tops—preferably of stocky
plants grown on rich soil—must be picked
before the flower-buds open, and must be

cooked from first to last in plenty of boiling water—an inviolable maxim with the most successful tyrants of the kitchen.

In many districts there are rooks enough and to spare, while in others their presence is longed for vainly. The more or less sudden forsaking of rookeries is not uncommon; as a rule, this is due to some definite cause, such as persistent persecution with the direct object of getting rid of undesirable guests, the depredations of carrion crows, disease or cutting of the rooks' favourite trees. Advice is constantly being asked as to means to induce even a few pairs of rooks to build in the tops of trees which possess all the seven conveniences spoken of by Richard Jefferies, as specially required by rooks. Old nests and worn out garden brooms are said to have proved successful; but the rooks may have come in spite of these alleged inducements; indeed, it has not been conclusively proved that they might not have come just as readily, if not more so, without them. The speedy demolition of their nest when a pair of rooks have started to build "out of bounds" of an old-established rookery has often been remarked. Is there a "piper" who will bring rooks to the trees in which we would have them?

It seems curious at first sight that oxlips are not more frequently to be met with in the woods; you may search all day long acres and acres of woodland literally carpeted with primroses without finding perhaps more than half a dozen oxlips. The explanation may lie in the fact that cowslips are seldom found in spots where primroses grow, and, since the oxlip is considered by many to be a hybrid between the primrose and cowslip, this may account for the scarcity of oxlips. Very occasionally an oxlip is found with its petals of the pale yellow of the primrose, and lacking the rich scent and colour of the cowslip which characterises the ordinary oxlip. Whether it be a primrose or cowslip-coloured and scented oxlip, if you transplant it to your garden, it thrives amazingly and remains, as years come and go, true in type, scent, and colour.

Our readers will have noticed about April 20th large flocks of fieldfares hanging about till all were ready in their good time to start the journey to their breeding haunts. The ceaseless chorus of their notes seems to signal their gladness that the time had come when they should return to the land of their true home, in which they were reared and learned to fly, just as those among men who have toiled and spent great parts of their lives in foreign countries, in search of food and fortune, ever return with undisguised delight to the spot where as children they lived and played. And yet it is strange that with an abundance of food on all sides, the fieldfares should become comparatively tame, since in the hardness of winter when they all but starved—some did—they were so wary. Maybe their joy at the prospect of courtship and a home beyond the sea had overcome temporarily their mistrust of men.

Blackbirds, on the whole, exhibit ideas superior to thrushes when choosing a nesting site. In one day of last year the nests of three pairs of blackbirds were found in very comfortable quarters—one in an old biscuit tin, another built into the side of a small barley stack where pheasants fed, and the third inside a stable, on the wall of which the roof-beams rested. This spring, a correspondent writes to say that he found a pair of blackbirds had built their nest with the top—to allow of their easy access, no doubt—about four inches below an old seven-pound tea canister that was firmly lodged in a high bush, the weather during building operations being very wet.

X. Y. Z.

Hawthorn.

Fairest daughter of the May—
Hawthorn, clad in bridal white!
Pearled with dew at dawn of day!

Blushing as the sunset ray
Bathes you in its rosy light—
Fairest daughter of the May!

Pallid in the twilight grey,
Radiant in the noontide bright,
Pearled with dew at dawn of day!

'Neath your shade young lovers stray,
Ere the evening fades to night,
Fairest daughter of the May!

Butterflies of colours gay
Come where honied blooms invite,
Pearled with dew at dawn of day!

Round you merry children play,
Gathering blossoms with delight;
Fairest daughter of the May—
Hawthorn, clad in bridal white!

MAUD E. SARGENT.

Nature Records of the Week.

(Sent in by Readers of "The Country-Side.")

Notes from Quorn.

March 17th, CHIFFCHAFF, one heard; March 29th, WILLOW-WARBLER, two seen; March 29th, CHIFFCHAFF, plentiful at Quorn; March 29th, WHITETHROAT, one seen; April 1st, FIELDFARES, still in small flocks; April 10th, WILLOW-WARBLER, still only a small number; April 10th, SWALLOWS, two only at reservoir; April 10th, WRYNECK, one heard; April 12th, YELLOW-WAGTAIL, two only (pair) at Quorn; April 14th, GULLS, 14 flew over Quorn; April 14th, SWALLOWS, 32 at reservoir counted—there were probably 50; April 14th, CUCKOO, one heard in Quorn Wood.—(G. F.)

Notes from Cullen, Banffs, N.B.

First flock of PEEWITS returned, February 27th; PURPLE SANDPIPERS last seen February 28th; CURLEWS passing over at 11 p.m., March 3rd; YELLOW WAGTAILS returned March 15th; REDSHANKS breeding note March 25th, and at breeding haunts March 27th; PEEWITS making nest holes, March 27th; WHEATEARS arrived April 9th; STONECHATS and MEADOW PIPITS singing, April 10th.—(J. Gowan.)

Birds Seen, Etc.

STARLING seen at Cullen, Banffshire, soaring round in wide circles, chattering all the time; I don't think I have heard one attempt to sing on the wing before.—(J. Gowan.)

SKYLARK timed to sing for 23 minutes 5 seconds on April 12th, at Bandon, co. Cork.—(B. C. Waller.)

BLACK REDSTART seen in Richmond Park on April 10th.—(A Reader, Glendarvon Street, Putney.)

KITES: A pair seen by me on Easter Sunday in Radnorshire (exact locality best omitted). Not the same two as I saw last August near Llanidloes, one of which had only half a wing—been shot at, I suspect.—(H. B. Williams.)

GREAT CRESTED GREBE: Eight seen on Penn Ponds, Richmond, on April 13th.—(B. D. Wenhan.)

FIELDFARES: About 20 seen in field at Swansea on April 17th.—(B. W.)

Arrival of Migrants.

CUCKOO seen on April 7th at Folkestone.—(H. Vinnicombe.)

WHINCHAT arrived at Studland, Dorset, on April 5th.—(D. E. Pye-Smith.)

RING-OUZEL: One seen on Skynid Mountain, Abergavenny, on April 14th.—(S. W. W.)

Marked Birds.

SPARROW: A white specimen has visited St. Luke's Churchyard, West Kirby, Cheshire, for several years.—(W. D. Armstrong.)

Nesting Notes.

LONG-EARED OWLS: Young in nest on April 7th; unusually low down, in large hawthorn bush, on Sussex Downs.—(R. J. Messent.)

WHINCHAT: Nest and 5 eggs found at Folkestone on April 10th.—(H. Vinnicombe.)

THRUSH has laid 4, and BLACKBIRD 3, eggs in a last year's nest in a hedge at Mereworth, and BLACKBIRD is sitting on all 7 eggs.—(P. Harris.)

ROBINS: Pair nesting in Ripley Church, for the second successive year. Nest under organ stool, largely made from Easter decorations.—(From Lancaster Observer, April 12th.) (B. Row.)

OUR BIRTHDAY NUMBER.

ORDER NOW.

As we announced last week, the issue for May 18th will be our second birthday number, and it will consist of a specially enlarged issue at threepence.

Our previous special numbers have given great delight to readers, but every effort is being made that this second birthday number of "The Country-Side" shall, in beauty and interest, surpass everything that we have done before.

Experts in various departments are being retained to write special articles, and among the interests dealt with will be

ENTOMOLOGY.
BIRD LIFE.
THE SEASHORE.
THE GARDEN.
DOGS.
CATS.
POULTRY.
PHOTOGRAPHY.

But these by no means exhaust the subjects included in the special number.

A magnificent series of photographs will illustrate this issue, and altogether we think we can say that the special birthday number of "The Country Side" will be a

LIBRARY AND GALLERY OF NATURE

in one.

The demand will be very great, and in order that you may not be disappointed go at once and order your newsagent to save you a copy of

OUR SECOND SPECIAL BIRTHDAY NUMBER
OF "THE COUNTRY-SIDE."

May 18th.

Price 3d

Queries, Answers, & Correspondence.

Correspondents will greatly oblige by writing on one side of the paper only.

Curious Broccoli.—This curious growth of broccoli was sent to us by a reader—Mr. R. S. Heath, of Calne, Wilts. It has a remarkably



Photo.]

A Curious Broccoli Growth.

Observe its snake-like appearance.

[Copyright.

snake-like appearance, which is even more marked in the specimen itself than in the photograph.

Meerkat as Pet.—Seeing your opening article in the COUNTRY-SIDE of March 30th, I thought the following might be of interest. We had a meerkat for four years, which was born in England. It lived loose in the house, and was allowed in the garden without any restraint, where it scratched up grubs from the roots of the grass and ate them. It used to retire to its cage only at night, and always went when we called "Cage, cage." When the meerkat was about three years old a fox terrier puppy, aged two months, was given us, and they became firm friends. They used to play and tumble about with each other, and often went to sleep curled up in a ball together. When the meerkat had sham fights it always backed at its adversary and bit over its shoulder, as in a real fight, and it is curious to note that the dog learned this trick and kept it up for years after the meerkat had died. The meerkat was very clever at catching mice. It would nip the mouse in the back of the neck and kill it, then eat every scrap; even the bones and fur. We had two other meerkats at the same time, but not for so long. One day they all escaped into the road and chased a strange fox terrier.—R. E. HAGGARD, B.E.N.A., Naples.

Two-Headed Snake.—On Monday last, whilst walking through the "Leete," near Mold, a place celebrated as being the spot where Mendelssohn composed "The Rivulet," my attention was drawn to a two-headed snake, of a light greyish colour, and well marked with a succession of black squares on the back, the heads parting about one and a half inch from the body. It was basking on the side of a rock in an almost perpendicular position, so a good view was obtained; length in sight about two feet, the remaining portion being embedded in some loose soil. Are such snakes of a permanent species and common in this country?—T. WILLIAMS, Hemington, Mold. [From the description, the snake would

appear to have been an adder; there is no species of two-headed snake anywhere, but two-headed individuals have been known to occur as "freaks" in some species.]

Horse and Rooks.—We have an old favourite horse, which is turned out daily in the paddock where the rooks are now busy building their nests. The rooks come down from the trees and perch on "Robin's" back, sometimes as many as seven at a time. They appear to wish to take "Robin's" long-haired coat from off his back, and also tug at the long hairs from his main. "Robin" seems to enjoy these attentions, and proud to contribute to the welfare and comfort of his feathered companions in the upholstery and furnishing of their nests. I may say "Robin" seems none the worse for it. Have other readers noticed a similar generosity in their four-

footed friends?—MRS. BARRINGTON, Thorley, Yarmouth.

Sheep and Young Rabbit.—While in Mid-Wales last week I witnessed the conduct of a sheep which struck me as being very strange. I happened to be on a moor where a lot of sheep with their lambs were grazing. I noticed one sheep lick for several minutes what at first I thought was a little brown lamb. Having not seen a brown lamb for some years, I walked nearer, and came up to within forty yards of the sheep, when the lamb, who turned out to be a rabbit, pricked up its ears and ran away, followed by the sheep at a slow trot. There was no farm near, otherwise I should have enquired whether this sheep (which I could identify by a black band across its head) had had a lamb and it had died, and had in some way adopted this rabbit. I should be exceedingly obliged if you will let me have your opinion in your ever-welcome paper, THE COUNTRY-SIDE.—H. B. WILLIAMS.

Pheasant Laying in Thrushes' Nest.

—From time to time one hears of curious, unnatural sites chosen by pheasants for the reception of their eggs, power.—"GAMEKEEPER."

such as old pigeons' nests and ivy clad trees; and though the occurrence is not rare, the majority of people would consider it decidedly unusual for a thrush to court disaster by building its nest on the ground. In the photograph is shown a thrush's nest not only built on the ground, but in which a pheasant thought fit to lay. The thrush had laid two eggs when the pheasant came upon the scene; and she came, saw, and was conquered, apparently, by a desire to co-operate with the thrush, and proceeded in due course to lay three eggs. She trampled down one side of the thrushes' nest, deposited two of her eggs just outside it, and the third right inside, and, unfortunately for the thrush, on the top of one of her eggs, with disastrous results. Of course, it would be a very simple matter to fake up such an incident, but, in this case, there are several people who can testify to the naturalness of the occurrence, and who were watching with considerable interest the strange combination, though it ended, as one would expect, in desertion by both claimants. Whether the pheasant was attracted merely by the cosiness of the site chosen by the thrush, and after scraping out the usual depression—which resulted in partial destruction of the thrushes' nest—accidentally laid an egg actually in the thrushes' nest, or whether she purposely meant to deposit her eggs with the thrushes', I cannot say definitely. I am, however, inclined to the latter idea, for the tendency of pheasants to lay to nest-eggs in artificially-made nests besides to those of their own species which they may come across in their wanderings, is well-known to all keepers, and is often encouraged to facilitate the collection of their eggs. Moreover, the fact that the pheasant broke down the thrushes' nest before laying her own eggs seems almost to prove that she was determined to deposit them with



Photo.]

Pheasants' Eggs in Thrushes' Nest.

["Gamekeeper."

The thrush had laid two eggs when the pheasant came and laid three.

those of the thrush, so far as was within her power.—"GAMEKEEPER."

Entomologist's Outfit.—Entomology is generally looked upon as a very expensive hobby; of course, this need not necessarily be so. I have recently been asked to give a member particulars of a cheap outfit for a beginner wishing to form a collection of lepidoptera. As this would probably be of interest to other readers, I enclose particulars. (1) The most important item, "The Field Naturalist's Handbook" (Rev. J. G. Wood and Rev. Theodore Wood), 1s. (2) Killing bottle gd., net 1s. 3d., pins 6d.; zinc pocket box gd. (Watkins and Doncaster, etc.), 3s. 3d. (3) To chemist for filling bottle, 6d. (4) Setting boards—remnants of cork lino—glue, say, 1s. 6d. (5) About half a dozen empty crystallized fruit boxes, 4 lb. or 8 lb. size, from grocer (these, when corked and papered; make excellent store boxes), say, 1s. (6) Squares of camphor from oil and colour merchants at 1½d. each, say, 6d. Total, 7s. 9d. These, with the COUNTRY-SIDE, would, I think, be about all a beginner would require. As regards setting boards, these can be made of American white wood; cork is not necessary. When I started I paid twopence each for these, each about a foot long.—FRED. W. CRATHALL.

Banana Stowaways.

—The excellent photograph of a snake recently found in a bunch of bananas at Covent Garden, which was reproduced in THE COUNTRY-SIDE of April 20th, leaves no doubt as to the kind. It is a specimen of the common boa (*B. constrictor*), a native of Brazil, and a non-poisonous species capable of inflicting a sharp, but not dangerous, bite. The boa constrictor is a very beautiful and intelligent snake, and makes a charming pet, but is somewhat delicate in captivity, and needs a high tempera-

ture to keep it in good health. I have made pets of these large snakes for many years, and have one now just under 12½ feet in length and 15 inches in circumference. This was born in confinement at the Clifton Zoological Gardens, Bristol, on July 17th, 1900, and was then about 14 inches in length. With me she is a very intelligent, affectionate, and gentle creature, but toward strangers her attitude is one of sullen hostility.

It is unfortunate that the creatures reaching this country, in the fashion of this boa, should be usually killed at sight. If, instead, they were coaxed or driven into a hamper, and dispatched to the Zoological Gardens, many interesting additions might be made to the collection. During the last few years the following creatures have come to my notice, having been conveyed to Scarborough in bunches of bananas:—One marine opossum (*Didelphys marina*), several geckos belonging to two species (the wall gecko and the dusky gecko), one snake (sp. ?—its discoverer promptly put it into the fire), two mygale spiders (*Psalmopoeus Cambridgii*—one measuring four inches in expanse of legs), many cockroaches of various species, including *Periplaneta americana*, *Panclhora exoletans*, *Nyctebora tenebrosa*, and others; a large locust (sp. ?), and several species of beetles, crickets, spiders, and other creatures not identified.—WM. J. CLARKE, F.Z.S., Scarborough.

A Salmon's Adventure.—You may be interested to hear of a very curious incident that happened some years ago, which, so far as I know, has never been noted in any journal. It was in 1891, I think, and the Culmstock Otter Hounds met at Pynes Bridge. All the people were on the same side of the river,

working up towards Stoke Canon. Before we had gone half a mile we cut off a big bend, and the hounds in a body suddenly jumped off the bank into deep water to swim across on to a small beach. The salmon was so scared that he went with a rush on to the beach high and dry in front of the hounds, which, of course, took no notice of it at all. The salmon then wriggled with his tail so violently that he was able to turn round and get back into the water unaided.—FRANK E. PEACOCK.

The Skimmer or Scissor-bill.—The remarkable birds known as skimmers or scissor-bills (*Rhynchopts*) are close allies of the terns, and resemble them in most points of habits and appearance, with the exception of the form and use of the bill. This, as the illustration shows, differs from that of any other birds by having the lower jaw much longer than the upper—that is to say, when the bird is adult, for the nestling has the bill normal in form. The birds feed, not by swooping on prey as terns do, but by skimming along the surface, ploughing it up with the long lower jaw, and snapping up any small fish, etc., which they encounter. They are, of course, quite unable to pick up anything off the ground; but, nevertheless, some are being successfully kept in

Then Mr. Toad, as umpire, stopped the combatants by gulping them down together—a wise umpire, for it left no room for discussion, only plenty for digestion!

They also like slaters, and condescend to worms if they feel very hungry. It is most amusing to watch a toad stalking a worm. He approaches very cautiously, and when within striking distance, he stops to meditate over a very serious question—which end of the worm shall he take? It's a toss up, heads or tails. He makes the most ridiculous faces, first peering at one end of the worm, with his head on one side, then at the other, and, perhaps, just as he has solved the mighty question, the worm wriggles on to his toe, and he starts back, with a look of amazement at the impudence of the creature. Having backed away, he again considers, but generally gives it up as hopeless, and seizes the worm in the middle. His tongue, invisible to the eye so instantaneous is the flash, darts out, there is a click, and a good deal of the worm (all, if it is a small one) has disappeared. Mr. Toad goes through the most extraordinary convulsions; he stamps and wriggles, scrapes his mouth with his hands (occasionally scraping the worm out again, on which occasions he

regards the resurrection as evidently miraculous), opens and shuts his eyes, and, the worm having been finally conquered, gasps, with a long-drawn breath of relief, and an "I've got you down at last" expression. The baby toad one day tackled a worm much longer than himself. He got down as much as there was room for, but an end remained hanging out of the corner of his mouth. He looked as though he was jauntily smoking a cigar.

Beetles and slaters are not stalked in the same calm fashion.

Portly old gentlemen toads even do a double shuffle after them, and—click, they are no more.

In the daytime the toads generally like to bury themselves. I have watched them making holes, which they accomplish by a circular motion of the wriggling hind legs and pushing back with their fore feet. In the evenings they get more lively, and come out in search of food, and often take a bath sitting up to their necks in the water.

Toads have figured in all kinds of ancient legends, and the present Emperor of Germany wears a ring on state occasions set with a black stone, a talisman of the Hohenzollern family. History relates that a princess of the family gave birth to a son, when a huge toad appeared on the bed and dropped the stone out of its mouth as a gift to the new born child. The stone was first set in a ring by the father of Frederick the Great, and each head of the Hohenzollerns has become the owner of the ring in turn. Its virtues as a talisman are held in great respect.

My toads at present have only given me interest and amusement, two things, perhaps, less valuable than precious stones, but quite worth having.

LILIAN E. BLAND.

In the title "The Wit of the Wild," given by Mr. Ernest Ingersoll to his latest book of natural history essays, which Mr. Fisher Unwin published on April 29th, the word "wit" is used in the old sense of wisdom. This expresses the ruling idea of the volume, which is made up of a series of essays under such attractive titles as "Animals that Advertise," "Life Insurance for Wasps," "Animal Partnerships," "The Squirrel's Thrift and How it was Learned."



Photo.]

Head of Skimmer or Scissor-Bill.

[Copyright.]

The long lower bill makes it quite impossible for these birds to pick anything up off the

the New York Zoo. Only five species of these peculiar birds are known, and they inhabit warm climates all round the world, one being African, one Indian, and the remaining three American. The specimen shown was sent to us by a reader.

Aliens in Ireland.

LONG ago, so legends relate, Saint Patrick banished all snakes and toads from the Emerald Isle. In spite of this excommunication we had the temerity to send from England this summer no fewer than seven toads, securely packed in cigar boxes, which arrived safely at their destination—a tomato house in the north of Ireland.

Here they have all the comforts a toad can wish for, dark holes and corners to hide in, and a special "hotel" made for them, which goes by the name of "Toad in a Hole." There is a main entrance to the hotel, and a back door. Two of the fattest toads have adopted the hotel as their permanent home, occasionally receiving their poor relations, who are allowed to enter by the back door only. The assembly is serious and very formal; the state of the weather and crops of beetles and slaters discussed. Near the hotel are the public baths, which consist of a large vegetable dish sunk level with the earth. A smaller one is provided for the two toadlets.

Many people think that toads are horrid, slimy beasts; but, really, they are most interesting to watch, if a little cold to handle.

They like small beetles better than anything. I once put down a beetle and a worm in front of a toad. The beetle instantly attacked the worm, and the fight continued for some time.

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to R. A. Ansell-White, Royal Hibernian Military School, Dublin.

Why, when two boys are upon a see-saw, if the heavier of the two kicks the earth, does the small boy sink to the ground?

The weights of the two boys are the respective pulls of the force of gravity on their bodies. In order that the small boy may sink to the ground, one of two things must happen: either the weight on his side must be increased, or else that on the other side must be decreased. In reality, the latter happens, for, when the heavy boy kicks the earth, he works against gravity, and, as it were, reduces his own weight so much that his companion is pulled right down before the immediate result of the push is lost.

Why is physical exercise beneficial to health?

Because the circulation of the blood is quickened all over the body. The quickened flow of circulating blood goes by preference to the muscular tissue, and the brain and other organs are relieved from excess of blood. The lungs expand more fully, take in more oxygen, give out more carbonic acid, and are better enabled to resist disease. The getting rid of waste matter through the skin is promoted by increased perspiration. If nutriment—food and air, etc.—be supplied, then the vital forces of the body, as a whole, brain, nerves, muscles, and circulating organs are all raised in tone.

Which creatures breed most abundantly?

The great family of insects are, perhaps, the most abundant breeding creatures known, nearly all of which are most prolific. And, to individualise this great family, that of the aphid (*Aphis rosæ*), or green-fly, stand foremost in their enormous and multifarious breeding. So fast do they multiply that one female may be the ancestor of six millions in five generations, and twenty generations are producible in one year, the young in autumn being born alive, and not from an egg. Fish, too, breed most abundantly. The cod spawns in one season, according to Lewenhoeck, above nine millions of eggs, contained in one single roe. The flounder is commonly known to produce above one million, and the mackerel above 500,000. The smallest herring has 10,000 eggs. Needless to say, they do not all come to maturity, or even the ocean itself would not contain them all.

What is the Will o' the Wisp?

Will o' the Wisp (also called Friar's Lantern and Jack o' Lantern) is the name given to a luminous appearance seen in

marshy places, churchyards, and over stagnant pools. Philosophers, from the time of Aristotle, have puzzled over the explanation of this "ignis fatuus" or "foolish fire," which for ages has been an object of great superstition, and it is doubtful whether, at the present day, the correct explanation is forthcoming. Some have suggested that phosphuretted hydrogen, produced by the decay of animal matter, is responsible for the strange light, whilst others have maintained that it is due to marsh gas, produced by the decay of vegetable matter. It is easier to follow the first explanation, as it is the former gas alone of the two that catches fire of itself in the air, or, in chemical language, is spontaneously inflammable. The flame is communicated along the line as the gas is generated in different places, which accounts for the flitting of the light. Electrical and phosphorescent theories have also been advanced to explain this curious phenomenon.

Why does a shuttlecock spin in the air when it is falling after being beaten?

In nine hundred and ninety-nine cases out of every thousand the shuttlecock is struck unevenly, so that it ascends with the line of its "centre of gravity" inclined to the perpendicular. The force of gravity pulls the heavy bottom into the perpendicular. Thus a current of air is forced between the underneath feathers, which, owing to the arrangement of the feathers, strikes, not those directly opposite, but some inclined to its course, thus forcing the shuttlecock to spin round. Since the feathers are set obliquely, this spin is increased during descent by the air pressing against their outer edges.

What is the best situation for a garden?

A garden is best situated on the side of a hill which protects it from the north and east winds; the water will easily be carried away on the slope of the hill, below the garden. The garden should face the south, but be slightly inclined towards the east to receive the benefit of the early morning sun. The subsoil should be sandy or calcareous, and there should be a good deep surface soil.

Was the use of cotton as a textile fabric known to the ancients?

Why does salt preserve meat; and why is salted meat less nutritious than fresh meat?

When and by whom were diamonds first formed artificially.

How can the earth be weighed?

When was coffee first used in England?

Why is it that even a thin covering of muslin will protect trees and other plants from frost?

The Week's Wild Life in Pictures.

(See opposite page.)

THE sycamore (t) is an alien which, once upon a time, enjoyed much favour as a shade tree. "The great maple is a stranger in England, only it groweth in the walkes and places of pleasure of noblemen" (Gerard). It is not popular partly because it too often forms a craggy, unattractive tree, partly because there are much better shade trees—the plane, for instance. Still, a well-developed sycamore is a noble tree. The flowers are fairly attractive, and the "keys" or fruits in autumn still more so. No tree ripens seeds more freely, sowing itself in hedgerows and plantations where its healthy saplings fight their way through against all competitors. The timber, which is white and soft, is used for various purposes, and it is an excellent fuel.

2.—The bear's foot is not one of the most attractive of the family. It is found wild in woods and hedgerows, chiefly on a chalky soil in the South and East of England, producing its greenish flowers in March or April on the young annual stems, together with the serrated dark green leaves. The other and more ornate British species, *H. foetidus*, is the stinking hellebore, also green-flowered, but cupped and bordered with dull purple, and produced a month or so earlier than those of the bear's foot. Every part of the plant has a disagreeable odour. The best of the hellebores are the Christmas rose (*H. niger*), the Lenten rose (*H. orientalis*), and *H. colchicus*; but they are not British.

3.—The young greenfinch is often an object of curiosity to people who know its parents well, for it has very different plumage, of a pale yellowish hue with distinct dark streaks. The characteristic yellow on the edge of the wing, however, appears in this first feathering, already broader in the young cock than in his sister.

4.—Even a casual observer is likely to notice that there are at least two kinds of white butterflies, which differ noticeably in size. As a matter of fact, there are a good many more than two; but, as a general rule, it may be safely assumed that the smaller specimens are either the common small white (*Pieris rapæ*) or the green-veined white (*P. napi*), while the larger ones are the large white or large cabbage white (*P. brassicae*), which is shown in the illustration. This is the creature whose caterpillar (though there are others) is most disagreeably familiar to us on our cabbages, a bluish-green person with faint yellow stripes and sprinkled all over with black dots. The butterfly appears plentifully in May, and continues in evidence through the summer.

5.—The angleshades is one of those moths which the person who is not an entomologist can look at and examine closely from a few inches distance, even touch with the fingers, and have difficulty in believing that they are alive. Yet it is a large and strikingly marked insect. But, as shown in the photograph, it sits with its wings crumpled into a shape different from that assumed by any other moth, while its markings of buff, rich brown, and olive green, bold though they are, are curiously suggestive of a withered leaf. It appears twice each year, in the spring and autumn, but the later brood is the more abundant, and it is in the months of October and November that it is most often met with, coming freely to sugar, and being very fond of the ivy blossom.

6.—The coot's nest is much like that of the commoner moorhen, but is not so likely to be found away from the water, and the eggs it contains are larger and have only fine specks without the larger spots of the moorhen's eggs.

OUR
Sale & Exchange

3 WORDS A PENNY.

See the Back Cover.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 358.)



1. Flowers of Sycamore, *Acer pseudo-platanus* (C. Percival Wiseman). 2. Bear's Foot, *Helleborus viridis* (S. Smith.)
 3. Young Greenfinch, *Chloris chloris* (D. Elliott). 4. Large Cabbage White Butterfly, *Pieris brassicae* (E. L. King).
 5. Angleshades Moth, *Phlogophora meticulosa* (W. Piggott). 6. Nest of Coot, *Fulca atra* (A. Nicol Simpson).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MAY 4, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s.

Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co."

Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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Birds I have known.

"PADDY," THE KESTREL.

By MAGDALEN F. P. TUCK.

"WILD as a hawk" is a saying that has now passed into a proverb, but it was a misfit as applied to Paddy. He never knew what fear meant; everything and everybody he regarded as a friend, from the head of the house to the very cat.

It was a terrible shock to this doctrine of his, when one day he was cornered and grabbed by a small terrier, who seemed to imagine that every feathered being on the place was for his sole delectation. Luckily, the housemaid, hearing the fray, rushed out in time to prevent serious damage. This happened more than once, although each time the terrier was rebuked sternly with a stick.

Kestrels are perfectly charming beings, but they certainly are an awesome nuisance to feed. Paddy was no exception to the rule. Of cooked meat he would have none. He was a confirmed cannibal, I regret to say, for his favourite dish was—bird. During the fruit season matters arranged themselves, for the gardener supplied him daily from the nets; but, later on, we were often sore put to it.

Being still an infant, Paddy considered himself unable to pull a bird or mouse to bits unaided. As he grew older he learnt to tackle such things alone, however, and it was really quite thrilling to watch him positively *unravelling* a thrush or blackbird whom the gardener had murdered basely in the nets.

It is always an agonising moment when one first sets free a treasured feathered pet. We always give our bigger birds their liberty, but we invariably feel a sinking of heart when they first stretch their wings and proceed to explore. On the occasion of Paddy's release my sister spent the best part of the day under a tall fir tree, in which he elected to sit, and under which about thirty tiny chickens were cheeping and running.

He varied the programme occasionally by sailing round the grounds, when she would patiently follow him until he elected to settle once more. She finally ran him to earth upon the roof, and with the aid of a piece of raw meat eventually captured and bore him to his cage in triumph.

But, after the first day, we did not trouble about him, but allowed him to wander at his own sweet will, for he was so ridiculously tame that we did not fear his leaving us—at all events, whilst we remained at home.

Paddy was extremely fond of bathing, and every day regularly he used to come and splash in the big bowl in front of the dining-room windows, which he shared in common with my jackdaws and various pigeons.

Carnivorous little cannibal though he was, never was a bird more gentle with his friends, unless, of course, we deliberately challenged him to a scum, when he would use beak and talons indiscriminately, always desisting, however, directly we put up a hand and stroked his ruffling feathers.

There was one object to which he had an extraordinary objection, namely, a boot. Put him on the ground and point a toe at him, and promptly he was metamorphosed into a biting, tearing, vindictive ball of feathers which attacked the said toe most spitefully, and used the most disgraceful Billingsgate meanwhile. We were not allowed to do this often, however, for my sister, whose special property he really was, had fears lest his naturally sweet temper should suffer seriously thereby.

He used to get rather a bad time of it among the swallows, for they used to mob him terribly when he was parading on the house top. They would circle round about him, shrieking and buffeting him from either side until they fairly drove him away.

If we wanted to please Paddy very much indeed, all we had to do was to catch an unhappy bat and let it fly in the open, when he would chase and chivy it, even giving it an occasional nip, or something equally efficacious in producing sounds indicative of deepest disapproval until he lost it among the trees, when it probably retired to the nest box, from which we had unkindly picked it. In those days we used to persuade ourselves that the bat enjoyed the proceedings as much as Paddy did; looking back, somehow I am not so sure upon the point.

But what a universal favourite he was! Everyone who came to the house fell in love with him, for he was a perfect gentleman, and always showed himself off to advantage, unlike some of our adopted children, who were apt at times to produce bad impressions.

The last time I saw him was the day I left home for a long sea visit. I went out to bid him farewell, and he swooped down to my shoulder and kissed me daintily in his own pretty fashion, talking meanwhile in a low, caressing voice.

And thus we parted, never to meet again. Whether his staunch, loving little heart could not stand the empty house and lack of comradeship which he had hitherto enjoyed, or whether as autumn approached the instinct of migration proved too strong for him, who shall say? Suffice it, that in our absence he disappeared, and left a void in our hearts which it was long ere Time filled up.

"JACOB," THE STARLING.

By D. STEWARD.

JACOB was a starling—I say was, for he is not.

"Jacob" is a name starlings take very kindly to; it is a name that they will soon learn to repeat sooner than any other. Perhaps this is partly due to the fact that it somewhat resembles some of their natural notes.

We have had two or three starlings at different times, and they were called Jacob—it suited them, both individually and vocally, equally well.

Our last Jacob was a wonderfully clear talker, and could imitate almost any sound.

He would reel off a long string of words, sentences, and sounds, and weave them, as it were, into a song, introducing some of his own notes and those of other birds in between.

The effect was rather curious, and, I think, unique—but none the less exceedingly pleasant to listen to, for his melodious voice was soft and clear like running water.

When he had come to the end of this original song, he would start it all over again without variation, reminding one of Simon Davy and his companions—

"And their talk was ever and ever the same."

Jacob never forgot anything that he had once learned—he was, perhaps, exceptional in this, but I think generally speaking, that starlings have far more retentive memories than parrots, ravens, and jays.

If he thought too much attention was being paid to "Joey"—a zealous rose-breasted cockatoo, who tried to monopolise everybody and everything—Jacob would call, at first very softly "pretty Jacob"; if this met with no response, then "poor Jacob" in a louder key, and if still no attention was given him, he would begin his song, generally breaking off in the middle to call "poor Jacob, pretty Jacob, sweet Jacob" in rapid succession, finally raising his voice until it reached a harsh pitch, when he was promptly hushed.

There was great rivalry between him and Joey; when the latter talked or screamed, Jacob would also talk and sing loudly, trying his small best to drown Joey's unmusical voice, and at the same time spoiling his own. Thus they would keep it up until one or other was removed from the room.

The Microscope.

The Structure of Rhubarb.

By A. H. WILLIAMS.

AS the present time of year removes any difficulty about providing the material, a little time spent in examining the structure of the "common or garden" rhubarb will by no means be wasted.

For our purpose a very tiny morsel will suffice, taken either from a tart or from



Photo.]

[Oddie.

Spiral section from cooked rhubarb.

some that has been stewed; the fact that it has been cooked renders it the more suited to our purpose, as in its then condition it is the more easily dissected or teased out with a needle.

Rhubarb is particularly useful for our work, as the details of its structure are not quite so minute as they are in plants generally.

With a needle pick out a scrap of the stringy pulp of the vegetable, place it upon a glass slip, and after adding a drop of water place a thin glass cover upon it, and then transfer the mount to the microscope.

If you get one of the fibrous, stringy parts into the field, one that has been subjected to the teasing-out process, you will find that it provides splendid examples of "spiral vessels," lengthened cylindrical cells with tapering extremities, which receive their distinctive title from the continuous spiral fibre of which they are formed. This fibre is very elastic, and its coils readily extend in response to the amount of the "teasing" process that is given to it.

The object will doubtless also show "annular cells," vessels in which the fibre consists of a series of rings, each one separated from its fellow. There are also elongated cells of plainer structure, with regular divisions at intervals; normally, these are filled with fluid. Within these latter there are curious crystalline bodies, known as *raphides*, and in the case of the rhubarb are composed of oxalate of lime.

Some plants, and particularly those of the cactus family, have their tissues so laden with these as to render their branches exceedingly fragile and brittle. The microscopical examination of vegetable structure, such as the subject of these notes, will be made much more easy and

clear by the addition of a drop of aniline colour, such as methylene blue, to the object.

Some readers having inquired for particulars of the "Postal Microscopical Society," I am able, by the courtesy of the secretary, to give the following information regarding that useful organization. It provides for microscopists (after they have passed the quite elementary stage of the study) opportunities for comparing notes with fellow-workers, and a medium for the exchange of mutual advice on associated matters.

Each member contributes a dozen objects each year, together with illustrative notes, in a book provided for the purpose. These together circulate from member to member, who add to the notes any information that they may possess. The subscription to the Society is 5s. yearly, certainly not an exorbitant sum. The president is the Rev. Gordon Grist, of Cradley, Malvern, and the secretary Mr. Leonard Sandall, of Oak Cottage, the Common, Lingfield, Surrey.

Additions to the Natural History Museum.

By R. Lydekker.

SOME time ago the Minister of Agriculture for Cape Colony was approached by the Museum authorities (through the Agent-General for that Colony) on the subject of obtaining specimens of some of the leading breeds of South African sheep for public exhibition. A generous response to the request was made in the form of skins and skulls of rams of the merino and fat-tailed breeds, which are now mounted and placed on show in the north hall of the building. The fat-tailed sheep, of which we give a photograph, is one of the most remarkable breeds in the world, the tail being of great length and also of excessive width at the base. In the specimen exhibited it is considerably over a yard in length, and in life must have weighed several pounds.

Fat-tailed sheep are met with in many parts of the world, but in few of them is the fatness of the caudal appendage so strongly marked as in the South African breed. This appears to be due to that breed, according to the general belief, being the result of a cross between the Persian fat-tailed and the African fat-rumped sheep. The latter, of which an example is shown in the same case, is a

very remarkable breed, characterised by its black head and legs, white body, and the development of a huge mass of fat on the rump; the tail being short. It is to this breed that the African fat-tailed variety owes the excessive development of the basal portion of the appendage from which it takes its name. The tail forms, we believe, a much esteemed *bonne bouche*, when properly dressed.

The merino, although practically unknown in this country, is one of the breeds supplying the bulk of the wool-produce of the world at the present day, if, indeed, it does not exceed all other breeds in this respect.

Merinos, as their name indicates, were originally a Spanish breed; but in early days the Spanish flocks produced more wool than the factories of the country could work up, and the surplus sheep were in consequence sold. In the year 1783, Louis XVI. bought a large estate at the village of Rambouillet, some forty miles west of Paris, where he established an extensive merino farm. Other flocks of selected merinos were subsequently introduced from Spain, with the result that in the course of a century or so the Rambouillet flock by careful selection were developed into a breed of smooth-bodied remarkable for their large bodily size and the excellence of their wool. The size of the Rambouillet is indeed so great that some years ago these merinos were nick-named "elephant-sheep"; and they have also the advantage of being much hardier than their Spanish ancestors. Merinos, and especially Rambouillets, have been exported to South Africa, the United States, South America, Australia, New Zealand, etc. The Cape breed appears to be directly derived from the original Spanish stock, and is now the source of the great bulk of the enormous wool-product of that Colony. The Rambouillet breed, on the other hand, is extensively kept in France, Germany,



Photo.]

[Copyright.

Fat-tailed sheep.

Cape Fat-Tailed Ram presented to the British (Natural History) Museum by the Minister of Agriculture for Cape Colony.

If you want to buy or sell Poultry, Dogs, Cats, Birds, etc., try our Sale & Exchange. See Back Cover.

Russia, and other parts of the Continent; and has been largely exported to Australia, Argentina, and the United States. In the last-named country the breed now extends from the Atlantic to the Pacific, although pure-bred flocks are limited to certain districts; and in Argentina there are enormous flocks of choice breeding.

Amateur Photography.

NOTES FOR MAY.

By F. J. ERSKINE.

AFTER April is done, there comes a time when the camera is hardly ever at rest. In the late spring and early summer, the subjects are so numerous that it is almost impossible to deal with them all in brief notes of this description. It has been said before, that the most profitable course for the amateur worker to pursue is to specialise on some given subject. This is really the only way in which real excellence can be attained, apart from the monetary side of the question.

A specialist in either flower work or animal studies can make more in all ways than by aimless snapshot work at any subject which comes uppermost. So the first advice for May, is for the amateur to choose some special line of work, and stick to it for the rest of the season.

Flower studies are peculiarly attractive in the summer months. The first step towards success is to study the work of the leading exponents, which is to be found in *THE COUNTRY-SIDE* and other journals, as well as in photographic exhibitions.

But it is not meant that the work should be copied slavishly. One of the greatest features in photography is personal originality. Study of good work shows the line of thing which is wanted; but even in high-class studies the worker may think that an improvement can be made, and the thing is to attempt to improve on these studies. There are safe to be failures, but also there will very probably be successes.

Experiments in lighting and backing form a fund of interest; and it is probable that the attempt will result in the discovery of hidden artistic talent when it was least expected. Now for the technical part of flower work. The great object is to get the texture of the flower, and not a hard, china-like effect. Harshness is no merit in photography, but in flower work it is a positive sin.

The best way of getting soft results is to give a most generous exposure in the first place, and develop with dilute developer, and the greatest possible care, in the second.

Snapshot work will rarely be successful for flowers. If a flower border is taken, it is most likely that a breeze is stirring which moves the blooms and causes a snapshot exposure to be the only apparent way of settling the question.

This is the reason that photographs of gardens are so spotty, as a rule. Even with the fastest plates there is not enough exposure given, and the picture comes out hard and chalky. The remedy is to do flower studies under shelter so far as may be, so that the blossoms may not be disturbed by the wind.

It is in the grouping and the lighting that there is the scope of artistic treatment. A very good backing is an uncreased sheet of nature paper. This is attached by drawing pins to a flat board, and placed behind the selected flowers. The lighting must be managed so that the minimum of

shadow is cast by the flowers, and so that they stand out and have a look of roundness and softness.

A good studio is a great help in this; but it is by no means essential. Any ordinary room with a certain amount of care can be made into a good photographic studio, and hints how to make the best of bad surroundings are to be found almost every week in the photographic papers which can be seen at any free library.

An isochromatic plate, a screen either three times or six times, according to the work which has to be done, are all essential. The screen may be the shilling gelatine film, in various rapidities, or it may be one of the higher priced optically worked glass ones made by the Sanger Shepherd Co.

When to use a screen and when it is best dispensed with are questions only to be determined by experiment. It is not possible—or expedient—to lay down a hard and fast rule. But in one matter it is allowable to be a bit drastic, and that is where exposure is concerned.

Flower work needs long exposures to get out the fine texture of the flower and the leaf. This being so, the resulting plate must be over-exposed; and therefore demands immense care in development. Supposing pyro soda to be used, the developer should be made up with two parts of pyro—instead of four—and one part of soda—also instead of four parts.

The remaining five parts of the measure—supposing an ounce one to be used—must be made up with water. It will thus be seen that the developer is weak pyro, with just a trace of soda to start the development. If the exposure has been ample, the picture should come out slowly and steadily.

From time to time, a drop or two of soda should be added; and when the detail is out the same amount of pyro should be dropped in with the utmost caution. The development should be continued till the picture shows clearly at the back of the plate.

On no account should bromide of potassium be used. This causes patches of unequal density, which clog the delicate detail that is the chief beauty of flower work.

The use of a tilting table is almost invaluable in flower studies, especially when doing such flowers as daffodils which have deep bells. Directions for making one of these useful accessories have appeared, I believe, in *THE COUNTRY-SIDE*. If it is desired to buy one, a good model can be obtained of Messrs. Butcher, called the "Primus." Another good dodge is to use a sheet of plate glass placed on the top of an old sugar box. This is lined with black paper so as to give an opaque background, and the flowers are laid on the sheet of glass, and taken by the camera being tilted to look down on them by aid of the table referred to above.

A capital book for the flower worker to

study is that dealing with the subject in the "*Practical Photographer Library*," edited by the Rev. F. C. Lambert.

For the rest of May work, it may be summed up in the statement that at no time in the year is the light better. In the latter end of the month at mid-day, snapshots of 1-30th of a second may safely be taken on fine days with a three times screen. This ensures both clouds and landscape on the one plate. In the northern parts of Britain, ploughing studies may still be obtained; and what is still more interesting, plates of hand-sowing.

A focal plane shutter passes so much more light than the ordinary type, that when using one, the exposure—even with a screen—may be put up to 1-100th of a second. But this needs that the lens be used at an aperture of *not less than* F. 6. Smaller apertures mean less speed. It is as well to bear this in mind.

As a good many workers use bicycles extensively to get about with, a few hints on carrying apparatus may not be out of place. A small Turner carrier, either a Skeleton or a "Ping Pong," will be found to answer well. The latter can be removed from the clips when not needed. The tripod can be secured by a short strap passed round the back forks of the cycle and then under the carrier. Thus a loop is formed and the tripod is pressed firmly against the back forks, so that it cannot shift easily.

The camera with slides is best stowed away in a leather case as this affords greater protection against dust, and also damage from tumbles, than the canvas sort. If the focussing cloth is folded into a pad, and placed at the bottom of the camera, it acts as a buffer, and minimises the jar. Some people think that over the front wheel is the better place as there is less vibration. The matter is one of purely individual opinion, and I have tried both with success.

Where a man is concerned it is better in front as then it is no bar in case a rapid dismount is necessary. In packing the cycle, it is well to see that the apparatus in the bag is not at all loose, as in this case a good deal of damage may be done. Each article should be stowed away in its own division, and not thrown in anyhow. Finally a spare camera screw should always be carried in the purse or on the watch chain.

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the May competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Photo," *THE COUNTRY-SIDE*, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

Live-Stock for Profit and Pleasure.

POULTRY.

The Sussex Fowl.

By "CHANTICLEER."

THOSE who reside south of the Metropolis will have observed that almost all the breeds of poultry kept have excelled in what is known as table properties, whilst the London markets have always displayed the Sussex type of fowl, which excel in size, shape, quality of meat and smallness of bone; in fact, their massive appearance invariably attracts admiration.

In such districts as Heathfield, where fattening of poultry is a thriving industry, as far back as half a century ago, the Sussex fowl has been proved to be the best bird to fatten in the quickest time, but although such an old breed, except in its own county, it is seldom seen. I hope the publication of these few notes may increase the breed's popularity.

In 1903 a club was formed to advance its interests which has now some two hundred members, including many influential noblemen and there seems to be every probability of the breed becoming more generally known as I consider it deserves to me.

The Sussex Poultry Club has drawn up a standard for the three varieties—viz., the red, speckled, and white, and as the illustration of the latter shows they are extremely handsome fowls which richly deserve attention, and when our poultry show committees give special classes for them, I have every hope that the Sussex fowl will become popular for exhibition.

Last summer when visiting the south coast I found many hundreds penned in the pink of condition at the Brighton Agricultural Show, and an examination proved their wonderful depth of body and width of breast, whilst their lovely soft plumage was particularly attractive. A feature of this show was the display of dead poultry in which the Sussex fowl predominated and supplied the chief winners, many couples being exhibited which, although but sixteen weeks old, turned the scale at 16 lb. a couple.

The Sussex chickens are easy to rear at any season of the year and grow wonderfully fast if well fed. Such birds are ready for the crammng machine, which is largely used in that district, at the age of twelve or thirteen weeks; in fact, many are ready at eleven weeks.

Experienced crammers will admit that no other breed makes more rapid growth than the Sussex fowl, whilst they are not to be despised as egg producers, as they allow about 160 to 180 eggs per year, which, for a flesh-producing fowl, is excellent. There are three recognised varie-

ties of the Sussex breed; red (or brown) which in the cock has a glossy brown hackle striped with black, and a red or chestnut brown body and a black tail. The hen is very similar to the cock in hackle and tail, the remainder of plumage being brown.

The speckled variety is worthy of note and has a very attractive plumage. In the male bird the hackle is a rich reddish-brown, striped with black and tipped with white. Wings have wing bow red and primaries white, tail white and black, the remainder of plumage being black, brown and white, all of which must be as evenly speckled as possible. The hen is somewhat similar, the body plumage being beautifully speckled on a brown, white, and black ground.



The Light Sussex Breed.

Ideal table fowls and excellent layers.

The Light Sussex, of which an excellent sketch is given, is highly recommended to lovers of poultry as a good all round fowl, almost an ideal bird for the farmer's requirements, and able to adapt itself to any soil or situation, being hard to beat for a combined table and laying fowl, being exceptionally hardy and quick of growth.

They have a snowy white plumage and with wonderful depth of body, it is seen to great advantage. The hackle is striped beautifully and tail feathers black.

The Light Sussex fowl are invariably profitable, and a capital breed for rearing spring chickens. The hens are indeed splendid mothers, whilst the chickens make rapid progress, always providing they are kept dry during the first weeks of their existence.

Sussex fatteners testify loudly to their adaptability for their industry, fattening easily and quickly, carrying a large quantity of flesh on the breast and having

a fine white skin. Eggs are produced in abundance, even in the depth of winter, especially from those strains of Sussex where the egg records are carefully kept.

It may in conclusion be confidently stated that the Sussex fowl combines beauty with utility, whilst the pure white legs and their smallness of bone add to their value as a table fowl.

DOGS.

THE show of great danes and borzois at the Crystal Palace was a most interesting one, and the promoters may be congratulated on obtaining so large an entry as 337. Never before has there been benched such a handsome collection of danes, of which, perhaps, the harlequins were the most admired by the visitors.

The Crystal Palace Toy Dog Show takes place on May 7th and 9th when, as usual, every toy dog of note will enter the lists for competition. Much interest is taken in the Hon. Mrs. Lytton's judging, as it is known that she does not approve of crippled Blenheim, and goes in for straight limbs and the real old type. The list of specials in honour of the judge is a very large and important one, and includes as donors the names of Lady Anne Blunt, Lady Emily Lutyens, the Hon. E. Dillon, Lady Betty Balfour, and Lady Constance Lytton.

Mr. Handley Spicer writing in the *Kennel News* apropos of Brussels Griffons states: "The English as a nation have natural aptitude for improving and developing the quality of live stock, and having adopted the Brussels Griffons for our own . . . have now the joy and satisfaction of seeing the Griffon of our dreams, typical, alert, full of expression and quality, springing up on every hand."

Mr. Hay Hutchison in the same paper gives a study on bulldogs' feet. His article is a very interesting object lesson, being illustrated with the varied types of "duck foot," "hare foot," the "weak pastern," and the "perfect," where the toes are well split up, the knuckles prominent, and the foot of medium size.

The London Bulldog Society have proposed the innovation of having two judges and a referee at their next show.

Mr. R. T. Pye's brindle greyhound Platonic, who ran third in the Waterloo Cup, has been sold for three hundred guineas to Mr. Megliston.

Lady Decies won the championship in Pekinese at the Foreign Dog Show, with Champion Pearl.

Judging from the display of French bulldogs at Westminster, the Parisian favourite is holding his own in Mayfair.

CATS.

THE extreme prevalence of ear canker amongst cats is sufficient reason for giving a few hints as to the best treatment of this troublesome complaint. The auditory canal of the cat's ear is peculiarly liable, from its open exposure, to irritation and inflammatory action.

The commencement of canker is denoted by uneasiness and itching, with spasmodic shaking of the ears. The cat will scratch at the root of the organ, which is generally hot and tender.

If the internal surface of the opening is carefully examined, it will be observed to be flushed and frequently dotted with minute vesicles, which subsequently rupture, and, mingling with the secretion in the base of the ear, give rise to an offensive brown discharge, which thickens and often completely blocks up the ear, causing great discomfort and distress, the more so if ulceration of the cartilage follows.

Remedial measures cannot be too early adopted. Make some pellets of cotton wool or bits of sponge, and soak in warm Condy and water. Use a pair of blunt forceps, and with one after another of the moistened pellets cleanse out the ear of all accumulations.

Then pour into the passage a few drops of sweet oil. Make a funnel of a piece of paper, and blow down as much boracic powder into each ear as will lie on a threepenny piece. Then gently manipulate the root of the ear externally with the thumb and finger in a semi-rotatory manner. If this treatment is pursued daily, recovery (when ulceration has not occurred) is usually established in about seven to ten days.

The diet for a cat with canker should be plain and unstimulating, consisting chiefly of milk and fish. It must not be forgotten that canker is frequently associated with eczema, when the two must be treated conjointly, otherwise the former returns, which accounts for the prevailing idea that canker of this description is incurable.

Convulsions or fits in young cats are not uncommon, and occur generally at the age of about six months. These distressing attacks may be caused by worms and indigestion, but more frequently are consequent on teething.

Sometimes a kitten will start rushing about, knocking its head on the ground; others will throw themselves on the floor, and become quite rigid. Care should be exercised in handling cats in either of these conditions, as they will sometimes bite badly in their unconscious and frenzied state.

Hot flannels should be applied to the body, and a sponge of cold water placed on the head. This treatment will quickly have the effect of relieving the animal, after which place it in a box or hamper in a quiet corner, and Nature's sweet restorer, sleep, will soon help to complete the cure. In cases where a cat is subject to frequent fits it is best to give small doses of bromide.

CAGE BIRDS.

Notes about Parrot-Keeping.

EVEN in these days, when the keeping of foreign birds has become quite a common, and, in a great number of cases, very inexpensive hobby, the keeping of parrots is still rather a precarious and risky pastime, so much so that not so very long ago a well-known authority expressed the conviction that as regards the African grey parrot—far the best and cleverest of all the speaking parrots—less than one per cent. of the birds imported survived in this country for twelve months.

It is a pity that this should be so, for the best recognised speaking parrots, which are few in number, are among the most charming and entertaining pets in all the feathered world.

The Time and Age to Buy.

As practically all these birds are natives of tropical or sub-tropical climates, it will be understood that the best time for their introduction to this country is at the latter part of spring, when the temperature has become fairly equable and the nights are no longer intensely chilly.

As the main object in securing a parrot is almost invariably to make it a companionable household pet, a young bird should always be chosen—provided it appears quite healthy and strong, and is well able to feed itself; it cannot be too young, as the younger it is the more tame and gentle and teachable it will prove.

Most parrots are of a treacherous disposition by nature, and are capable of inflicting terrible bites when so disposed, so that a bird that is captured when quite adult, and its fear and distrust of mankind fully established, is always apt to make unwelcome use of its beak when least expected.

The Grey Parrot.

As already said, this parrot, which is a native of Africa, is the foremost of the tribe as a talker. It is also one of the most difficult to acclimatise, which is, to a great extent, due partly to chills and to the popular error of feeding them largely on sops and scraps of everything that happens to be at table.

Its proper food should consist of a mixture of wheat, dari, canary, hemp, and a little maize or sunflower seeds. Any sweet fruits in season, nuts, and pieces of plain, dry biscuit may be given, and occasionally a little sopped bread, squeezed nearly dry.

Offer it water to drink once or twice a day, and give it pieces of soft wood to cut up for amusement. Possibly, when first bought, it may refuse this dry food through having been fed mainly on sops. In that case, it should have its food vessels partly filled with the dry seeds, and a little boiled maize placed on the top. A little sop may also have to be given for a time until the bird is gradually weaned on to the dry seeds. Protect it rigidly from damp and draughts, and if it takes cold give it a few pods of chillies. A young bird can be told by having a pearl-grey eye.

The Amazons.

Next to the grey, the Amazons make the best and surest talkers, and of the several species of Amazons the double-fronted is, as a rule, the best from this point of view. Altogether they are hardier and easier to acclimatise than the grey. Here, again, sops and animal food of all kinds should be totally avoided, and a diet of seeds similar to that given for the grey, but with a larger proportion of maize and sunflower, and the addition of a few oats, provided. A little boiled maize may be given twice a week, and an occasional bit of dry toast, or raw carrot, will be appreciated.

Indian Parrakeets.

Next in order, and generally at a long distance, come the Indian green and Alexandrine parrakeets. These sometimes make excellent talkers, but are more difficult to teach. They are very hardy, and rarely give much trouble to acclimatise.

The Wrong Kind of Grey Parrot.

This is the best term to describe the rose-breasted parrot of Australia, which is often sold under the name of red and grey parrot, so that many unwary buyers procure it under the impression that it is the real talking grey—a mistake that could not be made if one remembered that the real grey has a grey-coloured breast; and this species has a rosy-red breast. It rarely makes a good talker, and is greatly addicted to uttering horrible screams. No difficulty is experienced, as a rule, in acclimatizing this species. Both the last-named species will do well on a mixture of the seeds and foods mentioned above.

Country-Side Library.

Wild Flowers in their Seasons.

THIS daintily-produced book by Mr. F. E. Hulme is of convenient size for carrying in the pocket, and should prove a most acceptable companion for the country walks. It is illustrated with eighty carefully-printed coloured plates of wild flowers, by means of which the originals may be easily identified; and the letterpress is not only as might be expected, accurate, but it is eminently readable, giving, in addition to descriptions of the plants, much interesting information as to lore, derivation of names, etc. The arrangement is to take the flowers not in their natural orders, but according to the seasons—winter, spring, early summer, mid-summer, and autumn, but the author fully realises that "it is impossible in practice wholly to sort out our numerous wild growths into criticism-proof divisions," and so references are made to climatic, geographical, and geological influences. To the lover of flowers who does not profess to be an expert, this book is invaluable. (Cassell and Co.; 5s. net.)

A Girl's Garden.

This little book is not written for those who have large, well-cultivated gardens with plenty of means and space at their command; nor for those who, possessing a monotonous strip of ground, wish to secure a show of bloom, but have no great love for flowers. It is written for girls, especially those living in the suburbs of large cities, who, although they have plenty of time, possess small means, and yet have a real love for flowers, and would like to form a garden. The book, which is quite elementary, is written in a chatty, flowing style, and tells what should be done in the garden month by month, beginning with October. It is illustrated by a number of excellent photographs of flowers, and is well worth the 2s. charged for it. (Andrew Melrose.)

The Principles of Horticulture.

This book, intended to form an introduction to the theoretical side of horticulture, is by Mr. Wilfrid Mark Webb, F.L.S., hon. secretary of the Selborne Society, and lecturer on the Principles of Horticulture under the Surrey County Council. It is excellent of its kind, and is profusely illustrated by a useful series of diagrams. For most of the exercises the microscope is not necessary, although suggestions are offered to those who wish to indulge in more elaborate experimental work with the instrument. In an appendix there is given a list of the various families of flowering plants and of ferns, with a few facts of special use to horticulturists; while the index, which is particularly full, is correspondingly useful. (Blackie and Son, Ltd.)

The Book of the Open Air.

Published by Messrs. Hodder and Stoughton in twelve monthly parts at 1s. net. The first number of this justifies its title, for perusal of its varied pages leaves on the mind a fine, breezy sensation as of having rambled abroad by lane and hill-path under competent guidance. "In Praise of Rain" (by W. Warde Fowler), "Some English Butterflies" (by Anthony Collett), "The Flowers of Early Spring" (by Rev. Canon Vaughan), and "Ancient Ponds" (by Walter Johnson) are all excellent chapters, informing and brightly descriptive. The illustrations in colours, of which there are five in Part 1, are all highly artistic.

The Complete Fisherman.

A small but practical work upon "The Art of Capturing Fish with the Rod and Line." The author, Mr. Walter M. Gallichan, thoroughly understands his subject, and is a good teacher. There are chapters upon salmon and sea trout, brown trout and grayling, roach and bream, barbel, sea fishing, etc., which should be useful to those who wish to become expert anglers. (T. Werner Laurie; 2s. 6d. net.)

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three coupons (like that on this page) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Cat with Canker.—Bathe the ear which has canker with weak Condy and water. Dry thoroughly, and then blow down boracic powder through a funnel made of paper. Three or four applications ought to cure the canker if it has not been of long standing.—(to "A REGULAR READER," Weston-super-Mare.)

Blackbird's Eggs.—The two eggs, presenting, as you say, such a contrast in size, were hopelessly smashed in the post.—(to H. F. BLAKE, Colehurst, Rugby.)

Plants Attractive to Butterflies and Moths.—For butterflies the best flowers are asters and sedums, especially *S. spectabile*. For hawk moths, jasmine, honeysuckle, tobacco-plum, petunia. For moths of various kinds, ivy, privet, scabious, candytuft, sweet william, peppermint. Most attractive of all are some wild plants, as sallow, blackberry, traveller's joy, rag-wort, hemp-agrimony, willow herbs, devil's-bit, scabious, and thyme.—(to BEE.)

Early Wasps.—It is quite the ordinary thing for wasps to be found early in spring if the weather is mild; they are hibernated "queens," or fertile females, destined to be the mothers of swarms later on. You will notice they are always very big ones.—(to H. H. MASLEN.)

Name of Long-Tailed Tit.—The British form of long-tailed tit is that known as *Acredula rosea*, or, more correctly, as *A. caudata rosea*, it being only a local race of the Continental form, *A. caudata*; this, by the way, is distinguished by its pure white head, as it also has the rosy blush. The long-tailed tit commonly lays about the middle of April, so the nest on March 29th was got so remarkably early.—(to T. NELSON.)

Feeding of Frog, and "Miniver."—(1) A frog, no doubt, like other animals, eats when he can, and seldom gets quite all he would like; I have no doubt one full meal a week would suffice him, however. (2) Miniver is a local name for the stoat in its white winter coat, when it is more commonly known as ermine. The assumption of the "ermine" coat varies locally and individually, being universal in the high north.—(to M. WOODWARD.)

Painted Snipe and Comb on Bird's Toes.—The painted snipe (*Rostratula capensis*) is a well-known bird to Indian sportsmen, and is also found in Africa, but it has never occurred anywhere in Europe. There are other species in Australia and South America. (2) It is the usual thing for bitterns and herons to have a comb on the inner side of the middle claw—not the toe. It is difficult to say what the comb is for, although it has something to do with scratching, as all birds scratch themselves with the middle claw.—(to W. F. COOK.)

Landrail's Early Arrival.—The landrail you found dead, caught in wire netting, at Bexhill-on-Sea, on April 7th, during S.W. gales, was early, but not a month before its time, as these

birds arrive on the south coast during the last third of April. The photo, was, unfortunately, unsuitable for reproduction; many thanks for sending it.—(to E. F. SHEPHERD.)

Identification of Birds.—The bird you saw sitting on a bush in Finsbury Park on March 29th, and making a noise like clock-winding, was probably a corn-bunting, since you say it was about seven inches long. The other bird you saw in Queen's Wood, small and brown, and singing "twit-wit-r-r-r-twit-wit, and twit-wit, twit-wit," is not easy to identify from the description. You should try and get near enough to the birds to see if they are bigger or smaller than a sparrow, and whether the bill is stout or thin.—(to G. W. GILLESPIE.)

"Nut" Identified.—The "nut" you send is the seed of *Kentia Belmoreana*, a palm which is found wild only in Lord Howe's Island. The seeds are imported into this country and sold to nurserymen who grow the young plants in large quantities for use in the decoration of rooms, etc., for which this particular palm is greatly valued. The only specimen we know of in Europe that is large enough to produce seeds is in the large palm house at Kew. It is about 30 feet high, with a straight trunk 18 inches in circumference, and a grand head of feathery leaves each about 12 feet long. Your nut has no doubt "strayed" from some nurseryman's propagating house.—(to A. H. BOWHILL, Cargilfield.)

A Velvety Twig.—Your specimen is the stag's-horn sumach (*Rhus typhina*), a low tree with stout, irregular branches, and young shoots covered with a brown velvet-like down resembling that of a young stag's horn. The leaves are large, pinnate as in the ash, and in the autumn they assume a rich orange-red colour. The plant is a native of North America, but it is now fairly common in British gardens.—(to W. H. GROSER, Crouch End.)

Freak Rose.—The "freak rose," of which you send flowers, is a not infrequent example of proliferation. It is brought about by the flower axis being terminated by a monstrous bud, from which are developed leaf-like organs which are more or less green. We have before pointed out that a flower, such as that of the rose, consists of a slightly modified branch bearing a cluster of modified leaves (sepals, petals, stamens, and stigma), which sometimes revert and reveal their true character. We have seen rose flowers with leafy shoots growing from the centre of the petals, and others with several superposed flowers all on the same axis. The freaks may be classed with the beard and woman and the crowing hen.—(to A. E. SAUNDERS, Treffgarne, S.O.)

Mussels.—There has not been any article in THE COUNTRY-SIDE on the common swan mussel, so far. The "fresh-water mussel," *Dreissena polymorpha*, is certainly found near London; it was first noticed at the Commercial Docks, on the Thames, in 1824, and has been found even in London streets, when these have been flushed with water from the New River, and forming a living lining to water pipes in Oxford Street.—(to M. PRIVASS.)

The Care of Infants.—The feeding of infants is a topic of interest, and our lady readers should write to Mellins' Food, Ltd., Marlboro' Works, London, S.E., for a specimen copy of "The Care of Infants," a beautifully-prepared, illustrated book, which will be sent free to those mentioning "The Country-Side." It gives a great deal of useful information, and is well worth reading. Another little booklet, "Hints on Weaning," will also be sent free on application.

Muslin Curtains.—Lady readers about to purchase new curtains for their windows, beds, etc., after the annual spring cleaning, would do well to write to Messrs. H. Gorrings & Co., Queen's Walk, Nottingham, for a sample book, on approval, of their muslins, showing the various designs and qualities. These are of every conceivable kind and pattern, and some of them are very beautiful.

New Boot Polishes.—Messrs. E. Brown and Son, the well-known manufacturers of boot preparations, have just brought out new special polishes for black and brown boots, which, while being of high quality, are remarkably cheap. They are known as "Meltonian Pastes."

B.E.N.A.

SPECIAL ADVANTAGES FOR MEMBERS.

Messrs. Dollond and Co., opticians to His Majesty's Government, allow a special discount of ten per cent. on purchases made by members of the B.E.N.A. (postal orders must be prepaid) at any of their branches: 113, Cheapside, E.C.; 36, Ludgate Hill, E.C.; 62, Old Broad Street; and 223, Oxford Street.

Messrs. Harman and Sons, hatters, 87, New Bond Street, W., allow a discount of 5 per cent. to B.E.N.A. members.

Objects and Aims of the Association.—Readers may obtain a statement of these by enclosing an addressed envelope and two loose $\frac{1}{4}$ d. stamps.

Application for Membership.—Regular readers who approve of the objects and aims of the association may obtain cards of membership by enclosing a stamped and addressed envelope and one loose penny stamp.

B.E.N.A. List.—The first list of members classified geographically with lists of Local Secretaries, Members who will identify specimens, Secretaries of Exchanges, etc., etc., may now be obtained on application, $\frac{1}{4}$ d., post free. Postal orders preferred to stamps.

*All applications should be addressed to the local secretary of the district, or to Miss G. B. Norreys, Warham, Wells, Norfolk.

Members' Exchange.—Will members who have been in communication with Mr. H. S. Cheavin, hon. sec. of the Members' Exchange, kindly allow the matters in which they are interested to stand over for a little while, as before proceeding with the business of the exchange there are one or two points which Mr. Cheavin wishes to discuss with Mr. E. Kay Robinson. Mr. Robinson has gone abroad after his recent illness, and will not be back for a week or two.

Botanists' Mutual Aid.—Mr. J. G. Thomas, of All Saints' School, Elston, Newark-on-Trent, writes:—"Seeing that such a feeling of good fellowship exists between the members of the B.E.N.A., I thought, perhaps, that some of them who are owners of a good press for preserving plants, etc., would undertake to preserve and press specimens sent to them. It is very probable that some of us come across a rare specimen which we wish to preserve, and, instead of spoiling its beauty by our amateur efforts at pressing, it would be so much nicer to have it done properly. Of course, I do not mean that this trouble should be given gratis. Would you suggest this in your valuable paper? What do you think of the suggestion that members who are living in the same counties, who take an interest in botany, should meet together at places where any plant of interest could be viewed? It would provide a pleasant Nature ramble or cycle run, and through the medium of your paper members could state any rare plant which grows in their vicinity, so that others who possibly may not be acquainted with it may have a chance of examining it in its place of growth. A meeting place could be decided on, and other points arranged. I leave the suggestion to be enlarged upon."

A Micro. Evening.—An At Home, in connection with the East Dulwich centre, of which Mr. C. Acutt is hon. secretary, was held on the last Saturday in March, when the evening was devoted to the microscope. Mr. C. E. Heath, of Herne Hill, had charge of the evening, and had on view six instruments, amongst which were Watson's "Van Heurk" with $\frac{1}{4}$ -in. objective, Stewards' Students with 1-in. objective, to which polarized light and dark ground illumination by spot lens, to which were fitted Milliken and Lawley's Students with 2-in. objective. Upwards of three hundred slides were on view, amongst which were diatoms from the Isle of Arran, and other deposits, scales from eel, sole, and various lepidoptera, also a large number of entomological and general objects, of which an insect from Ceylon, lings, hystercellus, and a slide of rhinoceros horn, viewed by polarized light, were much admired. The members expressed their appreciation to Mr. Heath for the trouble he had taken, and the interest that he takes in the microscope.

COUPON.

Answers to readers cannot be guaranteed unless three of these coupons be forwarded with each query or specimen for identification. Available till May 11th, 1907

The Garden.

Work for the Week.

The Kitchen Garden.

ALTHOUGH the cultivator who has been industrious early in the year will now have much the best of it, the advent of May brings no marked diminution of work to be done in this department. The repairing of losses by slugs, bad germination, etc., must, in particular, be immediately taken in hand. There are also sowings to be made for succession, and it is not yet too late to set about preparing for a stock of winter greens. Where the lack of suitable accommodation has prevented their being started earlier seeds of such tender plants as cucumbers, marrows, and capsicums may now be sown out-of-doors. Should the weather be unfavourable it will, however, be best to wait until it is more settled and sunnier.

Weeds of all kinds are readily destroyed in the seedling stage, but they will cause infinite future trouble if neglected now. At this season, therefore, it is important to be liberal in the use of the hoe. To water freely and allow the surface of the soil to become dry, then pulverize it finely, and maintain it in this condition, in which state it will not readily dry up beneath, is, moreover, a valuable recipe for the saving of labour in future watering.

Beans.

The time has come when these should be sown freely. Whilst everybody appears to appreciate the good qualities of the scarlet-runner, dwarf kidney beans are not grown to the extent that we consider they should be. They possess the great merit of coming into bearing extremely quickly, and if sown thinly and kept well picked they will crop freely. The waxpod or butter beans merit a trial, and some of the newer dwarf kidney sorts have the advantage of being practically stringless.

Should broad beans be taken possession of by the black fly, the plants must be topped. As the insects only eat the youngest leaves at the top of the plant, doing this will effectively check them. Broad beans should be picked and eaten when quite young and tender. At the stage of development in which they are usually sold in shops we do not consider them fit to appear upon the table.

Tomatoes.

This crop will now be occupying the attention of nearly every gardener. If sown and grown on as previously advised, the plants intended alike for cultivation under glass and out-of-doors will now be nicely forward. In the case of the former it will have to be decided whether they

are to be cropped in pots or planted out. For the small greenhouse there is a good deal to be said in favour of pot-cultivation. The plants are more easily controlled, and with good management, excellent results are readily obtainable.

We favour the growing of either one plant having two branches, or two cordon plants in a twelve inch pot. Room should be left for top-dressing, and as soil good fibrous loam which has been stacked for twelve months is to be preferred. We do not recommend the employment of a rich com-



Erica Veitchii.

A first class garden shrub that can be easily multiplied by means of cuttings.

post, but some well-decayed manure may, with great advantage, be placed over the crows.

Plants for outdoor cultivation must not be permitted to become spindly in consequence of being stood too close together, whilst to let them be starved and pot-bound as is so often done by amateur gardeners, is an equally mistaken policy, which can only produce unsatisfactory results.

The Greenhouse.

Plenty of air must now be given to induce the flowers to last as long as possible, and care in shading will also assist in this respect. Hard wooded plants must be cut back after flowering to promote the making of strong new growths.

G. T.

A New Hardy Heath.

ERICA VEITCHII.

THE value of the hardy heaths in decorative gardening is now being recognised, as they are beautiful when in flower. In an ordinary light garden soil they soon become established, growing to quite large dimensions in a year or two.

The largest are *E. lusitanica*, and *E. arborea*, the latter being the plant from the wood of which the briar (*bruzere*) pipes are made. We have seen bushes of these two from six to eight feet high, and in the south of England they are naturalised, reproducing themselves from self-sown seeds.

A chance hybrid between these two originated in the south a few years ago, and it was distributed by Messrs. R. Veitch and Sons, of Exeter, after whom it was named.

It forms a shapely bush and produces white fragrant flowers in April and May. It is also useful as a pot plant, as is shown by the example here figured, which is a three year old plant that had been grown in a bed out-of-doors until last October, when it was dug up and planted in a pot.

In December it was placed in a greenhouse where it soon came into flower, lasting about a month. It was afterwards again planted outside, where it is now quite happy. Here is an idea for the amateur in the country with moorland to draw upon. *E. Veitchii* is a first-class garden shrub, and it is easily multiplied by means of cuttings set in very sandy soil in June, and covered with a bell-glass or handlight.

Garden Queries.

Parsley attacked.—The box arrived broken, and we found no trace of the "grub." Probably wireworm is the culprit. Destroy the parsley, and sow fresh seeds at once in another part of the garden.—(to S. P. Retford.)

Mutilated Leaves.—The elm leaves which you sent have been eaten by a caterpillar or beetle when they were young. The

maple leaf is marked with the black patches formed by *Rhytisma acarinum*, a fungus which may often be found on the leaves of the sycamore and various maples. The patches first appear in June, when they are yellow, but soon change to black. Trees growing near the sea are most liable to it.—(to C. W. Whall, Ravenscourt Park.)

The Use of Silt.—Sir Edward C. Buck, late Secretary to the Government of India, Revenue and Agricultural Department, reads a paper before the Indian section of the Society of Arts on Thursday afternoon, May 2nd, on "The Applicability to India of Italian Methods of Utilising Silt." It is claimed for the Italian work that it is a great campaign against malaria, with important agricultural results.

The Country-Side

THE COUNTRY : GARDEN : POULTRY : NATURE : WILD LIFE : ETC.

No. 104. VOL. 4.

MAY 11, 1907.

1d. WEEKLY.

The Goosander.

By SETON P. GORDON.

UNTIL 1879 this handsome duck was not known to nest in the British Isles, but is now met with fairly abundantly on many Scottish rivers, where it remains throughout the year, but, I think, has its numbers increase during the nesting season. The birds pair in early spring, but the eggs are not laid before the beginning of June, or even later.

They number from nine to twelve, and are similar to those of the mallard, only considerably larger, and perhaps also of a rather darker tinge. While nearly every keeper I have met has told me he knows the bird well, yet not one has ever seen the nest, although they have often met with the young ones.

The reason for this is that the nest is placed in the most unlooked-for situations—usually well down an old rabbit burrow. I had for years looked unsuccessfully for a nest, until one day I came upon a rabbit burrow, at the mouth of which lay a goosander's egg, newly laid, and surrounded by several broken shells of a considerable age.

Looking inside, I was delighted to see a goosander sitting closely—so closely, indeed, that she would not leave the nest, although I felt the eggs underneath her, but pecked vigorously at my hand. There were altogether nine eggs, but the mother bird was only sitting upon seven, as one was lying at the entrance to the burrow and another was outside the nest further down the hole.

When the eggs are first laid the nest is only a slight depression scraped in the burrow, but as incubation advances the parent bird adds quantities of down, with which she covers the nest when she is off feeding, which may be for hours at a time. Although not exactly nesting in colonies, the goosander has favourite nesting sites, and several pairs may be met with nesting in close proximity to each other.

I have noticed that the hen goosander is not particular where she deposits her eggs, and I have seen a fresh and a last year's egg in the nest at the same time, and it seems to be the case that very often the bird uses the same burrow for more than one year in succession. When disturbed the hen birds fly rapidly up and down the river, quacking softly the while, and are sometimes joined by their mates.

Last summer I was shown a nest of the species under some

thick fallen branches on an island. The hen sat closely, and by dint of careful stalking I was able to get within about ten feet of her, when the accompanying illustration was obtained. For nearly a week I visited the nest daily, but the bird, if anything, became shyer every time, so the first photo turned out the best.

There were eleven eggs in the nest and a goodly supply of down, but, sad to say, the young ones were never hatched. One day a friend of mine saw someone wading across to the land, and soon afterwards heard the report of a gun. On wading over shortly afterwards I found the nest all torn about and every egg taken, and have no doubt but that the parent bird was shot on leaving the nest, and this notwithstanding that the bird and eggs are protected by Act of Parliament.

The young are hatched off about the end of June, and very pretty it is to see a brood and their mother feeding by the river banks. The young are very energetic, and even when only a day or so old can half swim and half fly along the surface of the water with astonishing rapidity.

Young birds have been seen as late as October, but these were probably a second clutch, as the hoodie at times discovers a nest, then—poor goosander! I have often been puzzled by the behaviour of the hen birds during the nesting season. When the nesting haunt is approached several goosanders of both sexes, but chiefly females, seem to appear from nowhere, and fly backwards and forwards, quacking excitedly the while. This fact seems

rather strange, because in the nests I have examined the hen always sits very hard, whereas the birds one sees flying backwards and forwards must have left their nest if they had one, while the intruder was yet a long way off. The young grow quickly, and are well on the wing by August, when a keeper told me he killed 5 at one shot!

Very often the oyster-catcher and goosander nest in the same locality, and once I saw what was very nearly a bad collision between a goosander and an oyster-catcher, the oyster-catcher, in its anxiety for its young, making straight for the former bird, which only avoided a bad accident by a desperate effort. The goosander must do damage among the small salmon fry in rivers.



Photo.]

Goosanders' Nest.

[Seton P. Gordon.

There were eleven eggs, but no young were hatched.

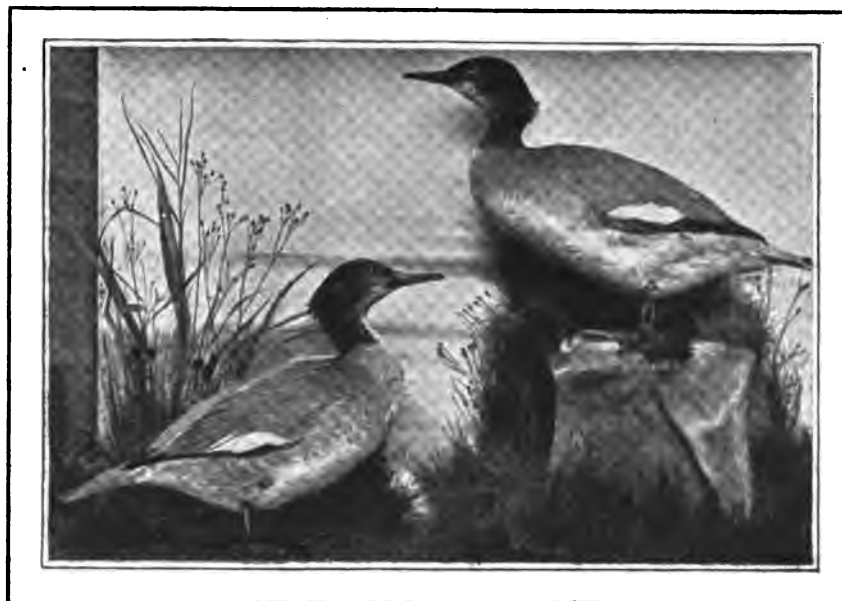


Photo.]

Goosanders.

[J. & F. Kirby

These were shot on the River Stour in mistake for wild ducks.

Country-Side Notes.

*"How gladly 'mid the dews of dawn
My weary lungs thy healing gale—
The balmy West or the fresh North—in-
hale.*

*How gladly, while my musing footsteps
rose*

*Round the cool orchard or the sunny lawn,
Awaked I stop, and look to find
What shrub perfumed the pleasant wind,
Or what wild songster charms the Dryads
of the grove.*

MARK AKENSIDE.

NOW is the time of beauty and danger—too often conjoined in life—for the orchards. If the threatening winds, which pile up heavy storm-clouds from day to day, fulfil their menace, the wealth of blossom, promising a bumper crop, may be squandered in one wild night. Because we grow apple-trees in exposed orchards seems a poor reason for excluding them, as we do, from our sheltered ornamental grounds. Surely the world holds nothing lovelier than the full-blooming apple-trees to-day. And, besides the later glory of its rosy-golden fruit in autumn, the apple-tree seems always the special haunt of dainty bird life. Among the mossy apple-boughs the chaffinches love best to weave the wonderful wool-felted cups of moss and lichen, which, were they products of human art, might be receptacles of jewels. On the same mossy branches in the later summer young swallows sit in cosy rows while their parents circle round twittering and taking toll of the mazy multitudes of little flies that dance among the apple-trees. Here, too, come the acrobatic tits all the year round, and here in the early year the bull-finch's rosy breast glows like a danger-signal—as indeed it is for the apple-buds. With flower, fruit, and wild life no tree is richer through the changing months."—From "The Country Day by Day," May 10th.

With the advent of fine weather, the birds become independent of our help in the way of food, but many people would be glad still to keep on terms of friendship and helpfulness with them, and so it is well to bear in mind that there are still attractions available. The chief of these is water; a daily-replenished bathing-vessel—a big flower-pan will do—placed in a convenient position, will be found a great attraction, if there is no water naturally available in one's immediate locality at any time of year. Such a bath should not be placed too near cover, for fear of cats; but it is all the better for being near an isolated tree or open shrub, on which the birds can alight to take observations before bathing, and preen themselves afterwards.

Moreover, a great variety of insectivorous birds can be attracted by the offer of insects. Of these, the mealworm, which is easy to keep, and clean to handle, feeding as it does on bran, stale bread, etc., is much the best; but mealworms, it must be remembered, will soon be turned into beetles, and will be scarce for a time. Gentles, bred for the purpose, scoured in

sand, and exposed in a saucer, will prove useful substitutes, and the kitchen "beetle-trap" may also be utilised, as cockroaches, in spite of their smell, are relished by many birds. Where the "cabbage-white" butterflies have to be destroyed, they may be thrown out on the grass for the birds, which, though they seldom attack butterflies on the wing, as they are so hard to catch, will devour them readily enough if put ready to hand—at least, this was the writer's experience in the East.

There has long been much discussion as to the cause of the baldness of the rook's face, the older view being that this was caused by the bird's thrusting its bill into the earth in its entomological researches. This view, however, seems very improbable when one looks at a rook's bill and observes that the nostrils lie in the front part of the denuded portion, which extends back to the eyes. Thus, if abrasion were the cause, it would indicate that the bird habitually thrust its bill in over the nostrils—a most unlikely proceeding. In observing young rooks kept in captivity, and denied the opportunity of digging, deeply, the writer has noticed that the beak shows signs of denudation all the same, this commencing on the lower jaw, while the upper remains feathered. Such a phenomenon is certainly opposed to the abrasion theory, and strongly supports the idea that the bare face is simply a natural sign of adult age. It must be remembered that birds which become bald when adult, such as some ibises, for instance, frequently have feathered heads when young.

The fact is, that many such indications of animal maturity frequently have an appearance of an abnormal or pathological process. The rook, for instance, is called by the natives of Yarkand the "rotten-beaked crow," and anyone who did not know the bird, and saw one for the first time, would be certain to put down the bare face to disease. As has been before pointed out in the COUNTRY-SIDE, the rook is a weak bird physically compared to the carrion-crow; for all we know, it may also have a congenital constitutional weakness of the skin of the face which inevitably leads to early baldness.

It must be remembered that Nature is "careless of the single life"; if an animal lives long enough to produce sufficient young to keep up the number of the species, it does not matter what happens to it afterwards. If this is borne in mind, some otherwise inexplicable structures can be understood. Thus, in some whales, there are only three teeth, and those in the lower jaw. They are flat and strap-shaped, and ultimately bend over the upper jaw till they meet, when the animal is practically muzzled, and can only open its mouth an inch or so. Very probably it is thus gradually starved, but as the deformity must take years to develop, no doubt sufficient offspring have in the meanwhile been produced to hand on the race; it is significant, by the way, that

these whales are rare, which looks as if the species were only maintained with difficulty.

It is even conceivable that an animal might develop a structure or habit disadvantageous to it, if this were to the advantage of the species. The conspicuous patches on the quarters of the deer, and the white tail of the rabbit, are supposed to fall under this category, as warning signals to the community, which nevertheless make the individual conspicuous. In this way the rattlesnake might really use its rattle, and the cat wave its tail, to warn their prey—unconsciously, of course. A predatory species, which was too successful, and never missed its victims, would stand a good chance of extermination by its own over-efficiency, exterminating the animals it should have depended on for food.

A few days ago a man was walking along a country lane bounded on one side by a bank and low hedge. Suddenly, and without for a few moments knowing whence it came, he felt a smart blow on the instep and saw a thrush, though stunned for a moment, make off with the usual scolding which denotes a nest. This was found neatly built into an overhung hollow in the bank. The thrush evidently fled from her nest at the sight of a possible source of danger about to walk right in front of her. That she collided with the man's foot was merely a coincidence, rendered the more possible since there was an exit only more or less towards the position the man's next step would have brought him to. If, however, you observe the general practice of birds hurriedly fleeing from nests in low situations, you will discover that they invariably dive downwards at first, or if the nest is on the ground fly along the surface. Of this habit robins offer common examples. The only explanation seems to be that when the cause of their flight, such as a human being or a cow, looms above the level of the nest, the first impression the sitting birds receive is that escape would be improbable otherwise than by dashing in the opposite direction, viz., downwards.

The arrival of the cuckoo is an annual event, and the fallacy that it acquires its softness of tone from a diet of raw eggs is still, apparently, a "popular and hardy perennial." With children there is ample excuse, for one can scarcely blame them for the beautiful creed of their years, embracing as it does an implicit belief in all their elders tell them. There can be few now of ripe years of discretion who cannot own once to believing the egg sucking notion about cuckoos, any more than they can deny an infantile faith in the goose-berry-bush theory of man's evolution. Let the fallacy live as a fable by all means—this need not prevent an impartial consideration of the true habits of the cuckoo without which May in England would not be May, any more than without its showers

April would be April. Laws for the protection of certain birds are one thing—but popular belief is another, and, in effect, more productive of good or evil as the case may be. When anyone can produce unprejudiced evidence that a cuckoo has been seen to visit bird's nests and to suck unbroken eggs therein, a prompt statement of the case will be welcomed at this office. We don't want jumped-at conclusions or prejudiced surmises, and please note the cuckoo's insectivorous bill.

* * *

Though, as illustrated in our issue of April 27th, ivy clinging to a wall will continue to flourish after the trunk connecting the top growth with the soil has been severed, it is not wise to experiment unless you are prepared to lose your ivy. Some foresters make a point of cutting the trunk of ivy they find on trees, as its embraces spoil the growth of their timber. Plants growing on the tops or sides of walls are comparatively common, the common nettle, which—as we also in childhood found to our cost wasn't altogether true—does not sting this month, being the most ready to thrive in such an inhospitable site. It would, however, be a very difficult matter to continue the growth of plants, or to obtain them from seed, in such quarters. There must be tens of thousands of seeds which fall on walls and other stony sites to perish, for each one that germinates and grows into a flourishing plant, in the same way that a seed self-sown in your garden outstrips your efforts by seed or transplanted seedling. After all, brick walls are made of clay and contain though in a very uninviting form the chemical constituents of soil, and the runner-roots of growing ivy, and the minute, uninjured feeding roots of seedlings therefore may find enough with the help of the air, to keep them going—after they get a footing.

* * *

So enamoured of the charms of freedom and its wild, simple life, with all its dangers and ceaseless persecutions, is an adult rabbit, that it is quite hopeless to try to keep one in an ordinary hutch. The consoling presence of a tame doe even will not overcome the resentment of a wild buck to close confinement. Yet if you get a pair of wild rabbits and put them in a shed or roomy pigsty, and don't inflict your own society on them too much, they will thrive and breed with some indication of their prolificness in freedom. But there is no more entertaining pet than a young wild rabbit, and it should be taken just before it leaves the nest, when with a little inducement after the manner in which you would teach a kitten to lap, it will feed itself, and very soon become the essence of confiding tameness; dozing with its big eyes wide open in a coal-scuttle, performing its toilet with exacting care on a footstool, and hopping on to the knees of those who are kind to it with a cheeky charm, as much as to say, "Well, here I am," which makes one feel that rabbit-pie is a luxury of the buried past.

* * *

The cuckoo-pint (*Arum maculatum*) will now be forcing itself upon our notice to such an extent that we almost come to despise its many interesting points. A gamekeeper reader has called attention

to the frequency with which lords and ladies may be seen at this season of the year with those parts of their leaf-stems just beneath the surface torn up and scattered about. This, he says, is the work of sitting pheasants off their nests to feed; the idea being that they eat the plants to help them to maintain their temperature at the proper level for the work of incubation. And incidentally, the discovery of dismembered lords and ladies warns keepers that there is a "setty" pheasant's nest not far off. It cannot be the insects incarcerated temporarily in the flower cavities that attract the birds, for they attack the plants before that period and in a different part.

* * *

The Agricultural Society's project of liberating a number of foreign doves—chiefly the Australian crested dove (*Ocyphaps lophotes*)—in the Zoo grounds will be watched with interest by many people. The ordinary domestic fawn-coloured turtle-dove is known to be able to thrive in the open, though an African bird by origin; but this species, having been so long domesticated, is naturally subject to many dangers under such circumstances by reason of its inexperience, and by there having been no elimination of the least wary specimens, as occurs in wild birds. The Australian bird, unless aviary-bred, is not open to this objection, and it is known to be doing well at large on the Duke of Bedford's estate.

It is curious how very few foreign birds have been established in these islands, in spite of the many attempts that have been made. All that can claim to be maintaining themselves in a feral state even locally, are the pheasant, the red-legged partridge, the little owl, the Canadian goose, and the mute swan. The fact appears to be that foreign birds either cannot stand our damp climate if they try to stay here, or, if they endeavour to migrate, do not know where to go and so are utterly lost. Of the species mentioned, the first three are not migratory, while the swan and goose are half-domesticated, being commonly under private ownership or protection. But there is no doubt that all these species would form an integral part of our fauna if the country were to become uninhabited.

The Merry Month of May.

Now calls the cuckoo all the day:

The kingcups glitter in the mead,
And warblers sing in sedge and reed:
For 'tis the merry month of May.

A foam of milky whiteness lies
On orchards sloping to the vale:
On breezy moors the lapwings wail,
And skylarks fade in azure skies.

The woodlands wear enchanting green:
And green is every leafy lane
That climbs the slope, and dips again,
And twists and turns, no further seen.

A wealth of orchids in the wood—
A haze of bluebells in the glade—
Wood-sorrel shrinking in the shade—
Wher'e we look, 'tis fair and good.

The blackcap's sweet and witching lay
Makes magic music in the dell;
And other bird-notes rise and swell:
For 'tis the merry month of May.

IDA NORMAN.

B.E.N.A.

(British Empire Naturalists' Association).

Glasgow Meeting.—A meeting of the Glasgow branch of the B.E.N.A. is being held in the St. Mungo Hall, S.S.; on Friday, May 10th, at 8 o'clock sharp. On interesting programme has been arranged.

Help of Members Wanted.—The Nature Study and Recreation Committee of the Children's Country Holidays Fund would be very grateful for any help from members of the B.E.N.A. residing in or very near London, who would be willing to help on the work of the committee by giving lantern lectures or talks in London schools to children about to be sent into the country for summer holidays, or by conducting rambles in the neighbourhood of London. The committee arrange for these lectures, talks, and rambles to take place during May, June, and July. The lantern lectures are given to groups of from 200 to 400 children, gathered in some hall, in the early evening, illustrated by slides of the most common birds, animals and flowers, which the children would certainly see in the country did they know where to look. The lecturers either bring their own slides, or, if they prefer it, can borrow about 60 suitable slides from the committee. Simple Nature talks on country sights and sounds are given to the children in their schools on any morning or afternoon (Saturdays excepted), illustrated by bunches of the commonest wild flowers, twigs of trees, coloured pictures, etc. Small groups of children are taken for rambles on Saturday afternoons to Hampstead Heath, Epping Forest, Wimbledon Common, Richmond Park, or some other convenient spot, the children or their friends paying the fares. If any of our London members will kindly help in this work, will they be so good as to write to the secretary of the committee, Miss E. R. Philp, 22, Lavington Road, Ealing Dean, W., to say (1) in which of the plans mentioned above they can assist; (2) the days and hours most convenient to them for lectures or talks; (3) the districts they would find most accessible for lectures, talks, or rambles.

Book Exchange.—Mr. J. W. Thomas, 20, Locket Road, Wealdstone, Middlesex, writes:—"I consider the book exchange, proposed by Mr. Davidson, of Glasgow, a most valuable suggestion, and I feel sure that such an exchange would prove a great boon to many members. I may say that I should be very pleased to act as honorary secretary of the exchange, if it is decided to form one; and therefore I suggest the following plan of working. All members having any books which they are willing to lend should send a list of such books to the exchange secretary. If possible, a very brief summary of the contents of each book might be added. Any member requiring the loan of a book would then send to the hon. secretary stating his or her requirements. The secretary would then communicate with the owner of a suitable book, asking that the book might be sent to the address given. Immediately on receipt of the book the borrower should write to the owner (whose name and address must be either written on the book or on a sheet of paper enclosed in the book), informing him of its safe arrival, and, at the same time, enclosing stamps to refund the cost of postage. It would be best to fix a period for which a book might be kept—say, a month. When the time allowed has expired, the book should be returned, and the owner should immediately acquaint the hon. secretary with the fact that it has been returned, in good condition. If it is desired to keep the book longer, the hon. secretary might arrange this with the owner. It would be understood that borrowers would make good any damage done to books while in their possession. I think that, managed on these lines, the book exchange would be a great success, and I am prepared to do all in my power to make it a flourishing branch of our society."



Queries, Answers, & Correspondence.



Correspondents will greatly oblige by writing on one side of the paper only.

"Drumming of the Snipe."—As the season is now on when the drumming of the snipe may be continually heard, it would be interesting, if, from careful observation, we could approach a step nearer to solving the much-discussed problem as to how the sound is produced. Since the subject was first mentioned in the COUNTRY-SIDE I have lost no opportunity of studying this curious bird, and after carefully observing with powerful field-glasses every movement of its flight, with the particular object of discovering some clue to the drumming, I feel bound to support Mr. H. P. Robinson's theory, expressed in Vol. I. COUNTRY-SIDE, page 129, viz., that the sound is produced by the wings, but he does not say now. I have noticed that the sound is made during the downward swoop only, at which time the tail is expanded, and the wings vibrate somewhat quicker and with much shorter strokes, but the moment the wings assume their ordinary motion the drumming ceases. Mr. H. P. Robinson says "The tail feathers may assist, but there is no evidence of it." Now, I think it is quite possible that the two outside tail feathers do assist, and that the sound is produced by the friction of the wing and tail feathers coming in contact. It is quite certain that the wings vibrate to the rhythm of the drumming, and this may possibly be the explanation.—H. S. WOODWARD, Colwyn, Falkirk, N.B.

Are Tits Destructive?—I see you constantly refer to the question as to whether tits attack buds or not. Neither the blue-tit nor great-tit do, though they peck and eat fruit, but the coal-tit is most destructive, especially to pear buds. I have repeatedly seen them, and, if left, they will take every bud off a bough. I have seen them, too, taking off and eating the small buds on the sides of young brussels sprouts. They eat the buds, and it is not for any insects which may be contained in them. If you were to shoot a coal-tit when on a pear tree in March, I feel sure you would find its crop stuffed with the young fruit buds.—CHARLES P. HOOKER.

Smallest British Mammal.—Permit me to say that the statement, in your issue of the 13th ult., that the harvest-mouse, *Mus minutus*, is the smallest British mammal is not correct. That distinction is possessed by the lesser shrew, *Sorex pygmaeus*, which, with the exception of *Sorex suaveolens*, is also the smallest of European mammals. The following measurements are taken from Professor Bell's "British Quadrupeds," second edition:—Harvest-mouse, length of the head and body, 2 in., 6 lines; head, 9½ lines; ears, 3 lines; tail, 2 in., 5 lines. Lesser shrew: Length of the head and body 1.97 in.; tail, 1.4 in.; hind-foot, .4 in. It was not until 1838 that the lesser shrew was separated from the common shrew, *Sorex vulgaris*, by the Rev. L. Jenyns, and until then the harvest-mouse was considered the smallest British mammal.—PHYLLIS H. ARUNDEL, Pontefract.

A Fossil Dragon-fly.—From the accompanying illustration of a fossil dragon-fly our readers will see at a glance that whatever changes this beautiful group of insects have undergone in the matter of colouration, or however they may have increased in the number of species, they have undergone little or no



Photo.]

[W. F. Piggott.

A Fossil Dragon-fly.

change of shape during millions of years. No less remarkable is the fact that the largest living examples of the group to-day are but pigmies, compared with fossil species, which have been met with more than once in the coal measures. One of these giants—*Meganeura monyi*—for example, had a body no less than thirteen inches in length, and wings a foot long. Another species was even larger, having an expanse, across wings, of no less than twenty-eight inches! This was obtained from the coal measures of Commentry, France.

A Study in Eggs.—Herodotus has remarked that the crocodile, of animals, grows the biggest from a small beginning; and it is certainly remarkable that so large and terrible a reptile should emerge from an egg not so



Photo.]

[W. S. Berridge, F.Z.S.]

A Study in Eggs.

On the left is an Indian python's egg and on the right a crocodile's. The centre egg is a hen's for comparison of size.

greatly superior in size to a hen's. The same thing might be said of the python; but in many reptiles the proportion between egg and parent is more like what one is accustomed to in birds. Pythons, unlike other reptiles, incubate their eggs, coiling around them, and at such times, "cold-blooded" though they are, their temperature rises perceptibly.

A Bold Weasel.—Having had a most interesting experience with a weasel a few days ago I send you the account of it, for, being a keen lover of Nature, I was greatly delighted by this little creature, whose behaviour seemed to me, from my former observations, very unweasel-like. While walking from Cranleigh to Wincey a few days ago, a weasel suddenly appeared at the mouth of a rabbit hole and stood watching me. On approaching him he darted back into the hole, but immediately appeared again at the end of the hole (some two feet in) and watched me intently. I kept quite still, and he came nervously forward with short rushes until he was within a foot of the entrance of the hole, and about six feet from me; then he lost nerve and darted back. This he repeated several times, and then he disappeared. Almost immediately he appeared at another hole, and watched me from there; this time, when he went back into the hole I went down into the ditch, and bent down with my face only one foot from the hole. He soon made his appearance at the end of the hole and watched me doubtfully. He soon advanced and had a long look at me, with his head held high, showing his white throat and chest. He continually disappeared and made a fresh start from the end of the hole. Then as he was retreating I suddenly squeaked like a mouse and he at once became greatly excited, stamping his little white paws and darting from side to side in the hole. Eventually he came right outside the hole, less than a foot from my face, and watched me. He seemed to have lost all shyness now, and when I stopped squeaking he still stayed close to my face, moving about with little short jerks, and constantly stopping to gaze into my face. For fully four minutes he continued in this manner, and then he got frightened by my moving rather suddenly and rushed off along the bank. I saw him again some 20 yards higher up the bank at the mouth of another hole, watching me as I passed. Never before have I seen a wild creature so close to me and so entirely free from fear. I should be greatly interested to hear if any other reader of the COUNTRY-SIDE has ever found the weasel anything but a very shy animal.—E. R. BUCKELL.

Rat Killed by Thrush.—I went the other day to look at a thrush's nest in the shrubbery of the garden here. The birds had their three young ones, and the nest was in a low yew about five feet from the ground. As I got near I saw a large rat beside the nest; two of the young birds had disappeared, and the rat was about to attack the last one. As I looked there was a rush of wings, and the mother thrush flew at the rat, and attacked it so fiercely that it fell from the tree. I went up to the rat, which was lying on the ground quite dead, and a great part of its inside was left beside the nest hanging on the tree. The thrush immediately went and sat on the nest quite calmly as if nothing had happened. I had no idea before that it was possible for a bird's beak to kill a rat and rip it open. Does any reader know of another instance?—D. R. HEATON, Gomshall, Surrey.

A Habit of the Sparrow.—I notice that the sparrows about here are extremely fond of feeding off the male catkins of the black poplar. Is this a common habit of these birds? I do not remember observing the fact in other parts of the country. The wood-pigeon will greedily eat the catkins as well.—E. W. MURRAY-MORGAN, Bayswater.

Lizard Losing its Tail.—Are all lizards able to drop their tails at will when alarmed? I suppose the idea is to facilitate escape? My daughter caught one on Chailey Common, Sussex, and placed it on the ground for inspection. After fully a quarter of an hour, during which time it appeared fascinated, and allowed us to examine and touch it, it attempted to escape, and my daughter picked it up, not by the tail, when it promptly dropped this appendage, nearly half its length, which wriggled and jumped about.—E. M. S., New Bushey, Herts.

Blackbird's Curious Behaviour.—Last spring I found a nest in a large evergreen in the garden, about 12 or 15 feet from the ground. I went up to it, and found a thrush's with one egg, which, I am sorry to say, she deserted. The nest remained there all the winter, and this spring I was told that a bird was nesting in this particular bush. I could see no other nest, and so supposed that my informant had been mistaken, but more by accident than design I knocked the branch on which the nest was placed, and, sure enough, off came a bird, which, owing to the intervening foliage, I could not identify as it flew away. I expected to find that the thrush had laid again, but was surprised to find it lined in the usual blackbird fashion, with four eggs. I have since noticed that the cock bird does most, if not all, of the incubation, as I have seen him going on to the nest, and he is always sitting when I pass, with black plumage and a bright yellow bill. Also, a thrush is sitting on an old nest of her species, made at the end of last June and never used, but I have not put her off yet (for fear of making her desert), so cannot tell if she has relined it or not. These two were the only deserted nests in the garden, but there were several in which broods had been reared last year. Did the birds select the former because they were cleaner or in better preservation than the ones which had been used, or was it merely an accidental choice? There is a missel thrush's nest here in the unusual situation of a bare open bough of a "monkey-puzzle," about 4½ to 5 feet from the ground, and I have been able to take several photographs of the birds.—C. L. COLLENETTE, Woodford Green.

Mongoose as Pet.—It may interest your readers to hear of a very fine specimen of the small Indian mongoose which has been an inmate of an Edinburgh suburban home for the last three years. Thuldy was brought home from Bombay three years and a half ago on board one of H. M. cruisers. She was very much teased by the officers and has never regained her confidence in people in general. She never forgets her original owner, though he may be away for many months at a time; she is always ready to welcome him, and allows him to handle her freely. In his absence she is particularly devoted to two other members of the family, always sleeping at the feet of her young master. She has no hutch, the eiderdowns of the house being her cosy corners by day when not basking in the sunshine, or on a tile hearth. She is never tied up, our only care being that she does not go out by herself. There is nothing prettier than to see her frisking about in the garden

in the sunshine. A rough-haired fox terrier is her companion pet, and although they can hardly be classed as friends, they live together and give each other a great deal of amusement and exercise. Thuldy is very dainty in her food; bread and milk, a spoonful of cream, and yolk of egg form her chief diet, and tiny bits of cooked meat or fish two or three times a week; cherries and grapes seem her favourite fruit. She is exceedingly inquisitive, and likes to see all and everything that comes in to the house. Thuldy is very fond of being brushed and combed, and thoroughly enjoys a warm bath. She fears nothing but the mowing machine and dinner bell.—P. C. RANKEN.

Well Dressing in Derbyshire.—A pretty custom is observed at Tissington, near Dove-dale, in Derbyshire, on Holy Thursday or Ascension Day. There are five springs or wells in the village, and these are prettily decorated with flowers in a curious manner.

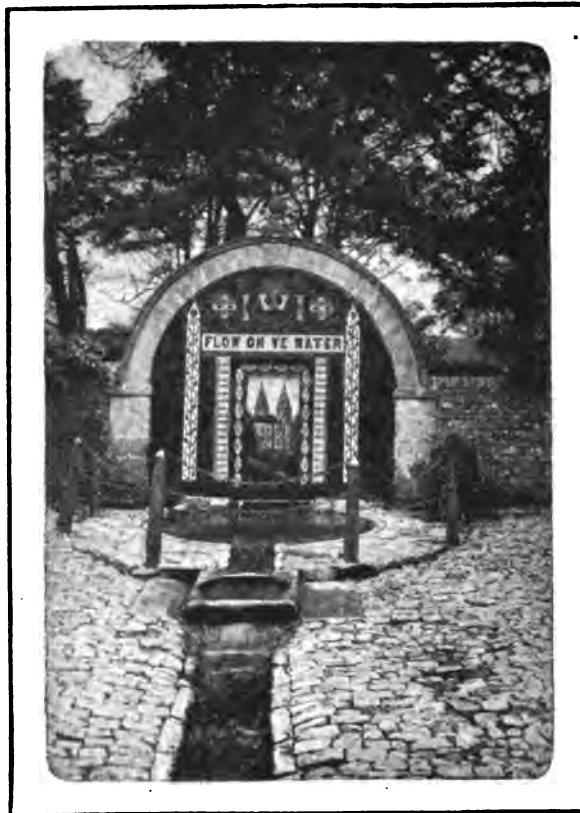


Photo.]

Well-dressing at Tissington.

[K. H. Cocks.

The local springs are decorated in this way on Ascension Day.

Boards are cut into arches and other shapes, covered with moist clay half an inch thick, and flowers are then stuck to the clay in borders and mottoes. The whole device is placed in position on the well, and has a most beautiful appearance, as the illustration of one of these wells, which we publish on this page, will show. Well-dressing day is observed as a holiday at Tissington, and many visitors go in from the surrounding towns. A service is held in the church, and at its conclusion the clergyman and congregation form a procession and visit each well in turn, the clergyman reading a portion of scripture, and the congregation singing an appropriate hymn.

Movement of the Chaffinch.—Re your discussion on the gait of the chaffinch, on Friday, at Epping, by hiding among the bushes I got to within 10 feet of a male chaffinch that was feeding on the ground. While I kept quiet it walked, but as soon as I moved it flew away, after hopping several times. I suggest that a chaffinch only hops when frightened, and to give itself sufficient impetus to fly quickly as soon as it takes to flight.—Yours truly, B.E.N.A. 4237.

Astronomy.

PHENOMENA IN MAY.

By Norman Lattey.

DURING May the length of the day increases close on an hour and a half. On the 1st day breaks at 2 a.m., and twilight ends at 10 p.m., the latter extending into the dawn at the end of the month. For the first week the sun rises about 4.30 a.m., averaging a minute earlier each morning. Sunset takes place between 7.20 p.m. and 8.3 p.m. with a similar lengthening.

The moon's "last quarter" occurs on the 4th, "new" on the 12th, "first quarter" on the 20th, and "full" on the 27th. She will occult several fairly bright stars during the month, but none of them sufficiently conspicuous to be specially interesting. The moon will also be in "conjunction" with, or apparently approach near to all the planets, and one of the principal asteroids on various dates, but the phenomena will occur either in daylight or be invisible in these islands—at least, as far as the principal planets are concerned. On the 12th the moon will be at her greatest distance from the earth, viz., 252,500 miles, and on the 26th at her least distance, 222,000 miles.

Of the planets, Venus and Saturn are still "morning stars," also Mercury and Mars for the early part of the month. Mercury will, however, become an "evening star" after the 24th, when it will be at "superior conjunction," i.e., when the planet, the sun, and the earth will be in a straight line, so to speak, with the sun in the middle. Mars will rise about midnight until the latter half of May, getting gradually earlier each evening. He will, however, not be conveniently placed for some time yet. Jupiter is still above the horizon in these islands for a few hours before sunset, and should be looked for as soon as possible after daylight before he sinks into the evening mists. Neptune and Uranus are beyond the reach of all but the largest telescopes, at any time.

Meteor showers are not prevalent in May, the only display of any note being that known as the Gamma Aquarids, which is usually expected during the last week in April or the first week in May. The special interest attaching to this shower is its suspected connection with Halley's famous comet, the point in the sky from which the meteors appear to issue being significantly near the computed position of the comet's anticipated return. Fine showers were witnessed in 1870 and 1871, and lesser displays on subsequent occasions. Though the agreement between the two phenomena may be merely accidental, it is more than probable that careful watching this year may have been rewarded. On the 29th another shower may be looked for, issuing from the constellation Pegasus.

Among stellar objects visible this month the most superb is undoubtedly that wonderful object, the great cluster in Hercules. Possessors of a star atlas will easily find it between the stars Zeta and Eta, rather nearer the latter. With the exception of an even more extraordinary cluster in the southern hemisphere this is the finest of its kind. It was discovered by Halley in 1714, and can be seen with a binocular as a hazy star. Through a large telescope it is a glorious spectacle of some two thousand suns crowded together like a swarm of luminous bees. The constellation Hercules will be found well above the eastern horizon throughout the month.

Nature Records of the Week.

(Sent in by readers of THE COUNTRY-SIDE.)

Notes from Bell Rock Lighthouse.

The atmosphere being, for the most part, clear, few birds have been seen here lately. On March 16th, a large number of black-birds, song thrushes, skylarks, and several redwings, were about the lantern all night. On April 4th a barn owl rested in the kitchen window of the tower, and a male snow bunting, in beautiful plumage, was got on the lantern. On the 5th, a large number of wheatears came to the lantern—the first seen this season. Several starlings were on the lantern the same night. On the following night there were also a good many wheatears, male and female.

On the 10th, a brambling was seen on the rocks, and on the 13th a robin. At 7 a.m. on the 10th, I heard the twitter of birds passing overhead when on the balcony, but could not see them. Shortly after, while looking at a distant steamer, with the telescope, I saw that a continuous string of birds, not in flocks, but singly, or by twos and threes, were passing through the field of the glass. They would be about a mile distant from me, and all flying N.-W. towards the land. Judging from the twitter I heard, and their flight, I concluded they would be a late arrival of pipits, larks, or wagtails. The wind had been cold and fresh from N.-E. for several days previously, but had abated, and milder weather again setting in, had probably made these migrants again seek northwards. For the past week no small birds have been seen.

Bird life is scarcer here for a few weeks at this time than at any other season of the year. The winter-feeding ducks, and most of the gulls, have gone to their breeding haunts, while the terns have not yet put in appearance. There are, as yet, no tiny fry of the saith or billet in the rock pools, nor sufficient corner low-water garbage to tempt more than one or two solitary immature gulls to remain. Occasionally a few gannets, guillemots, and razor bills are seen passing, but there does not appear to be feeding for them about.

Towards the end of March the first pinkish clump of the spawn of the lump-sucker (local name paille-cock) was observed pressed into a corner of the rock, with the brilliant rose-coloured male already watching over his charge. About the middle of April, however, there were still a good many bulky, repulsive-looking females swimming up and down the creeks, apparently looking for suitable corners in which to deposit.

Most of them are meantime speckled over with a grey parasite, the head of which is buried underneath their dark skin, and these do not—apart from the trouble they must be—improve the unsightly appearance of paille-johnny in the least. Swimming slowly in the weedy creeks, they are not in the least afraid, and, rising to the surface, will swim towards one with partially open mouth showing a good frontage of teeth, between which one would not care to trust their fingers.

The females are seldom seen after depositing their spawn, as stated, the smaller male, paille-johnny, being left in charge. And some are indeed faithful to their trust, and will sometimes make a rush at a hand, or anything else put near their "nest," and carry away any small stones or whelks tossed near it. I have not ascertained on what they feed, for they do not take any bait thrown to them, and only once have I seen one—a male—taken with a baited hook, and thought it may have got hooked accidentally in the course of clearing away the bait from the vicinity of its "nest."

Animals.

CAT rearing six young rabbits at Spalding.—(J. J. Towns.)

Arrival of Migrants.

CORNCRAKE heard at Bandon, Cork, on April 20th.—(B. C. Walley.)

CUCKOO was heard at Luzborough, Romsey, this morning (April 24th) for a long time; and NIGHTINGALES on April 22nd, since which date they have sung every night.—(J. B. Hillier.)

HOOPOE seen at Long Marston, Gloucestershire, on April 1st.—(Dr. W. Elliott.)

Birds Seen, Etc.

WATER-RAIL found exhausted (no food inside it on examination), in second-storey room in house at Mablethorpe, Lincolnshire, on April 11th. GANNET found dead, also foodless, in next parish, Theddlethorpe, on April 17th.—(J. Conway Watter.)

WAGTAILS: I saw nearly 100 wagtails together on some telegraph wires near Peterston, Cardiff, on April 18th. Counted over 50 of the pied, and nearly 40 of the yellow variety. Several times they were disturbed by passing traffic, but after flying a short circle always returned and settled in about the same place.—(S. W. W., Abergavenny.)

Nesting Notes.

CHAFFINCHES: Two hens now (April 21st) sitting in one nest at Melplash, Dorset, and have been for more than a week. I have not examined the nest, as it is in a difficult position, being on the very outside twigs; but I have thought there is a double clutch of eggs, as last year I found a thrush's nest with nine eggs, which two birds sat upon. It is unusual?—(A. Spiller.) [Yes.—Ed.]

SWALLOWS seen at Baslow, Derbyshire, on Friday, April 19th; returned to old nesting site, but have again gone away.—(C. E. Harvard.)

LONG-TAILED TITS: Pair found at Cardiff roosting in their finished nest on April 19th, but no eggs in it.—(W. B.)

Marked Birds.

ROOK: White-headed specimen seen feeding along with others at Totland Bay, on April 26th.—(M. G. G.)

Insects.

HOLLY BLUE first seen and caught on April 20th, at Maidstone, Kent.—(A. Silcock.)

SMALL COPPER seen at Folkestone on April 23rd.—(L. Hocking.)

Notes from Quorn.—Since writing you I have observed the following migrants.—April 16th, HOUSE-MARTINS, two seen; April 17th, CUCKOO, two heard near Quorn Wood; April 17th, TREE-PIBIT, one heard in full song; April 19th, TREE-PIBIT, three heard.

Notes from Rickmansworth.—March 12th, a flock of 30 to 40 WHITE WAGTAILS; March 30th, CHIEFFCHAFF and WILLOW WREN both seen and heard; March 31st, saw two CHIEFFCHAFFS feeding on insects on the sallow; April 5th, one MARTIN; April 6th, one common WHITETHROAT; April 7th, YELLOW WAGTAILS; April 15th, three SWALLOWS, and in the evening several WILMBREL heard calling while flying over; April 16th, five SWALLOWS, and heard WRYNECK and several CURLEW calling at night on passage; April 18th, another flock of WHITE WAGTAIL; April 22nd, CUCKOO heard, REDSTART seen; April 23rd, Two common SANDPIPERS on the river bank; April 24th, SEDGE WARBLERS back again.—(H. R. Leach.)

Notes from the Lake District.—This year the summer visitors are late in arriving in the Keswick district.—Our earliest dates are:—April 6th, WHEATEARS, in song, common; April 7th, RING OUZEL, one, in song; April

8th, CHIEFFCHAFFS calling; April 19th, WILLOW WREN first heard; April 21st, TREE PIPIT. There are no signs of the cuckoo, swallow, or of either of the martins. BUZZARDS noted frequently, two or three at a time; A MERLIN seen on April 8th. PEREGRINE and RAVEN twice seen; April 18th, CARRION CROW's nest, five eggs, in oak tree; April 19th, L.T.TIT's nest, one egg, also COAL-TIT building; April 21st, a solitary WHITE WAGTAIL noted.—(G. A. and R. B. Whyte, Edinburgh.)

The Week's Wild Life in Pictures.

(See page 373.)

EVEN the rascally crow tribe contrive to look innocent when they are young; their eyes, whether they are going to be dark, as in most cases, or light, as in the jackdaw, are of a soft blue or grey, and the inside of their mouths is pink, where later the external blackness will seem to have penetrated within.

2.—So it is with magpies; and in both cases it will be noticed that, as far as plumage goes, the characteristic feathering of the parent is found in the nestlings. But the clothing of these is softer in texture, and shows little of the gloss which enlivens that of the old birds.

3 and 4.—The cock-chafer, with its clean nut-like shape and chocolate-coloured wing-cases, looks almost good enough to eat; but it has nothing else to recommend it, for it does great harm to vegetation. About now it becomes common in all parts of the country, buzzing slowly about hedges and shrubbery in the twilight with a disagreeable tendency to get tangled up in ladies' hair.

5 and 6.—The peppered moth is one of a small group of moths which, with their fat bodies and clean-cut wings, look out of place among the thin-bodied geometers where they properly belong. The large stick caterpillar, however, is one of the best known and most typical "earth-measurers." The moth, ordinarily black and white, is one of the insects most addicted to melanism, pure black specimens being by no means uncommon.

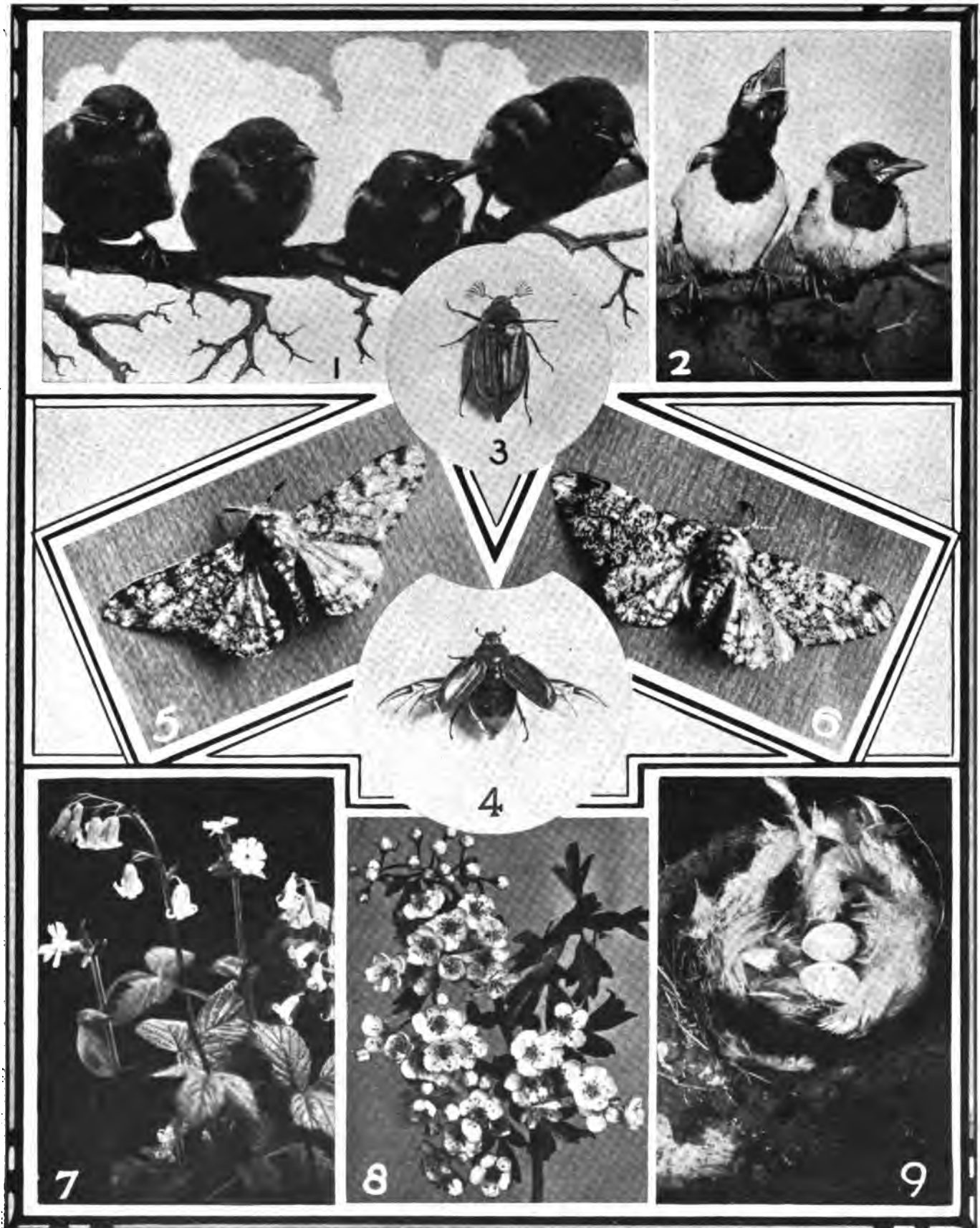
7.—The bluebell, or nodding hyacinth, is now at its best in many an English wood, carpeting the ground with its sky-blue flowers. It lives in woods because its enemy, the grass, will not give it a chance in the open. Planted in a flower bed, it enjoys the sunshine. It increases rapidly by means of offsets and also from its freely-produced seeds; we have known a small patch of some hundred or so bulbs, planted in a wood, to increase in about five years so as to cover half an acre. The seeds should be gathered in June, and immediately scattered on the ground where it is desired to establish bluebells. The champions and ragged robins frequently grow among bluebells, the conditions which favour the one favouring the others also. The bluebells and pink campion shown here have for their companion a bramble, its young, rich green leaves harmonising with their flowers.

8.—The hawthorn is popularly known as "May," no doubt because it is gay with flowers in that month. In the North of England the flowers are known as "bread and cheese," and children gather and eat them as they do sheep sorrel, with evident enjoyment. The smell of hawthorn blossom is disagreeable to some persons. Although usually planted to form fences, the hawthorn grows into a good-sized tree under favourable conditions. The coral-red fruit or haws are eaten by birds, and the undigested seeds are ejected, hence the appearance of seedling hawthorns in all sorts of places.

9.—The swallow's nest is very readily distinguished from the martin's by being open, while the other bird's is closed up to the eave under which it is fixed, except for a small entrance-hole. The eggs of the swallow are also spotted, while the martin's are plain white.

THE WEEK'S WILD LIFE IN PICTURES.

(See page 372.)



1. Young Carrion Crows, *Corvus corone* (S. Smith). 2. Young Magpies, *Pica rustica* (I. A. Metcalfe). 3 and 4. Male and Female Common Cockchafer, *Melolontha vulgaris* (R. Hancock). 5 and 6. Peppered Moth, male and female, *Amphydasis betularia* (J. Lambert). 7. Bluebells, *Scilla festalis*, and Pink Campion, *Lychnis dioica* (E. A. Gollidge). 8. Hawthorn, *Crataegus oxyacantha* (J. H. Crabtree). 9. Nest of Swallow, *Hirundo rustica*, Photo. taken through the roof of a barn (B. Hanley).

The Country-Side.

A Journal of the Country, Garden, Poultry, Nature,
Wild Life, &c.

Edited by E. KAY ROBINSON.

SATURDAY, MAY 11, 1907.

THE COUNTRY-SIDE is sent post free for one year to any address in the United Kingdom for 6s. 10d.; to places abroad for 9s. Each Annual Subscription carries with it Membership of the British Empire Naturalists' Association.

All remittances to be made payable to the Manager, "The Country-Side," Ltd.; Cheques and Postal Orders to be crossed: "& Co." Prepaid advertisements are inserted, as space permits, at the rate of one penny per word; the scale of charges for displayed advertisements can be had on application.

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Vegetables that Ought to be Better Known.

By H. C. DAVIDSON.

THE meagre lists of vegetables given in English catalogues are not drawn upon as they might be, while if we turn to foreign catalogues we find there a vast number of vegetables which are practically unknown in this country.

Here are a few taken almost at random from a French catalogue: Aubergine, cardoon, celeriac, chicory, chou de Burghley, couve trouchada, hop, maize, mercury (Good King Henry), potato onion, patience, rampion, rocambole, salsify, scolymus, skirret, and *Stachys tubifera* (Chinese artichoke). One or two of these are sometimes grown in English gardens, but even the names of most of the others will be unfamiliar, though they are well worth growing, if only for the sake of variety.

One of the best of them is salsify. It needs much the same cultivation as the parsnip. The seed should be sown in drills in April, but if the land is very heavy, holes should be made with the dibber at intervals of nine inches and filled with light rich soil, a few seeds being then sown in each, and the plants gradually reduced to one to each hole. If the sowing is done too early the plants are apt to run to seed. The same thing often happens in a dry summer if they are not watered, but no great harm will be done if the flowers are picked off at once.

In autumn, before severe frost comes, the roots should be lifted and stored like carrots. Salsify is an excellent vegetable if well grown and well cooked—first boiled, then cut into rounds and fried with egg and breadcrumbs and served hot in oyster-shells. So treated it resembles the oyster in flavour, for which reason it is often called the "vegetable oyster."

The chief obstacle to the popularity of *Stachys tubifera* is, I fancy, the cook. That important person rarely likes trouble, and the small joints of the roots certainly do require a good deal of scraping and cleaning. But, cooked as recommended for salsify, or even merely boiled, it is decidedly superior to the Jerusalem artichoke.

It may be grown in the same way as the latter, but, as the tops are dwarf, there is no need to plant the tubers more than six inches apart and eighteen inches between the rows. The roots should be lifted and stored early in November.

Rampion, scolymus, and skirret are also tuberous-rooted plants, which may be grown and cooked in the same way as the vegetables just mentioned. Rampion is a campanula, a native of this country. The only difficulty with it is its tendency to run to seed, but this may be counteracted by sowing not earlier than May in moist rich soil and in a shady position.

Scolymus is called sometimes the "golden thistle," in consequence of its yellow flowers and spiny leaves, and sometimes the "Spanish oyster-plant." It is stated in Nicholson's Dictionary that the leaves and stalks are eaten, like those of the cardoon, by the people of Salamanca; but it is chiefly cultivated

for its root. As it grows three feet in height the drills should be three feet apart, and the plants thinned out to eighteen inches. In flavour there is little difference between it and salsify. Skirret may be propagated either by root cuttings, like seakale, or by seed sown a foot apart in light soil not over rich. It is distinctive in flavour, and may be commended to those who want something new.

The potato onion and rocambole both belong to the Allium family. The latter makes an excellent substitute for garlic, to which many people object in cookery; it is very much milder in flavour. It is sometimes used in pickles. The plants are very prolific, producing bunches of bulbs not only at the roots, but also at the top of the stems. They are dried and stored like ordinary onions.

The usual method of propagation is to plant some of them about six or eight inches apart in early spring. Their chief requirements are light rich soil made quite firm, and plenty of moisture. Liquid manure applied during the summer is useful in increasing the size of the bulbs. The stems should be supported, otherwise they are sure sooner or later to bend and break. The potato onion needs rather more room, but in other respects the method of cultivation is very much the same.

The hop is nearly always grown in gardens for decorative purposes, but it makes a very good vegetable. The young shoots should be cut when they are about the same length as asparagus. They should be cooked in the same way, and served with melted butter. Maize, or Indian corn, is very popular in America, and, though they are now obtainable in Covent Garden, they are purchased chiefly by big hotels frequented by Americans.

Patience is a species of dock, and may be used as a substitute for spinach. A hardy perennial, it needs little attention, and produces quantities of leaves year after year. They should be eaten when young. Mercury or Good King Henry is another substitute for spinach. It is grown extensively in Lincolnshire, yet for some reason seems to be almost entirely confined to that county.

Besides the leaves it throws up a number of shoots, and these are cut from the beginning of April to the end of June, and cooked in the same way as asparagus, which they rather resemble. It is therefore a very useful vegetable, well worthy of a place in our gardens. The seed should be sown in drills a foot apart in April, and the plants should be thinned out to the same distance. As they will occupy the same position for several years the ground should previously have been deeply dug and well manured.

When they die down in autumn a little rich soil should be thrown over the crowns. Not much cutting should be done the following spring, but afterwards the plants will yield a full crop for a long time, in the same way as rhubarb does.

Couve trouchada and chou de Burghley belong to the cabbage family. The latter looks like an ordinary cabbage, but inside is a small flower-head like that of a broccoli. It requires the same treatment as broccoli, but is harder. Couve trouchada is sometimes called the seakale cabbage, the idea being that the midribs of the younger leaves taste like seakale. As a matter of fact the resemblance is not very striking, and the Couve trouchada, as a vegetable, is inferior to chou de Burghley. The plants grow to a large size and require a good deal of space.

The cardoon is a very favourite vegetable on the Continent. It should be grown like celery—the seed sown under glass in March or April, and the plants transferred to trenches at the end of May. The soil should be rich and moist, the trenches four feet apart, and the plants about eighteen inches. As earthing up checks growth it should be deferred till the end of September or the beginning of October. The plants will be ready for use about a month later. Celeriac should be treated like celery, except that it does not require earthing up. The tuberous roots, when boiled, are intermediate in flavour between celery and parsnips. Chicory is another vegetable which needs blanching, but more in the manner of seakale—by covering with pots. The seed should be sown in April, and the crowns protected from the light in the following spring; or the roots may be lifted in autumn and forced in the dark.

The last vegetable on my list is the aubergine, or egg-plant. It succeeds best with hothouse treatment, but in warm districts may be planted out like the tomato. The seed should be sown early in the year in rather a high temperature, and the plants moved into small pots, and finally into eight-inch. A warm, moist atmosphere is essential to success, and during growth liquid manure should be given liberally. When six fruits have set each plant should be stopped.

The Latest Notes from the Zoo.

By Frank Finn, B.A. F.Z.S.

THESE has been quite a rush of good things in the way of ruminant animals in the past fortnight. To take British creatures first, the pair of white wild park cattle have produced a calf. There is nothing remarkable in this, as the parents were both born in the Zoo themselves, though of pure park parentage.

But this youngster is black, and though black calves are occasionally produced in the park herds, this is the first ever born at the Zoo. Of course, the fact that black calves are born at all to these so-called eastern cattle is one of the best arguments that they have been once domesticated and bred white by selection, though at some very early period; for no naturally white wild species has ever been known to produce a black or even coloured variety.

Other interesting cattle are specimens of the Gayal, or Mitham (*Bos frontalis*), of the hill regions of Assam and other eastern parts of our Indian Empire. These are heavy animals, with high-ridged backs, and are typically

Questions worth Answering.

PRIZES FOR READERS.

WE invite readers to send in brief answers to the six questions below, and for the best single answer received we shall award a prize of five shillings. No reply should exceed one hundred words in length. Answers each week must reach us by the Monday following the publication of the paper. We, of course, retain the right to publish any answers that may be sent in. Write on one side of the paper only. Address, "Answers," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. The prize this week is awarded to R. E. Warrior, L.C.C. School, Arthur Street, Peckham, S.E.

Why is it an egg cannot be easily broken by pressure on the ends between the palms of the hands with fingers locked? Is there an authentic case on record where it has been done?

It is very difficult to break an egg by pressing directly upon its ends for the reason that the shell is constructed on the

"flat" because the number of vibrations per second has been decreased.

Why are chimneys of manufactories built so high?

The chimneys of manufactories are made very high in order to increase the draught, and thus give a greater intensity to the fire. By this means more fuel is consumed, and a greater heat evolved in the same time. Wind, rain, and other atmospheric conditions have far less effect upon a long chimney than upon a short one. Within a certain limit, the longer the chimney, the greater is the draught. In addition to this, the longer smoke-stack ensures a more thorough dispersal of the smoke and noxious fumes given off during combustion.

Why does whale oil possess such a disagreeable odour?

Whale oil is obtained by heating the



Photos.]

The Gayal from Assam.

Chamois from Austria.

[W. S. Berridge, F.Z.S.]

Interesting animals recently added to the London Zoo.

black with white "stockings," and with close coats. They are often, however, mismarked, and one of the present specimens is pied like a common cow, being as much white as black. There seems to be good reason for thinking that the Gayal is simply a domesticated form of the Gaur (*Bos gaurus*), usually mis-called the "bison" in India.

They are not very domesticated, as it is, as the primitive tribes who keep them never work or milk them, and only occasionally slaughter one. The beasts receive no fodder, though salt is given them, but they are sufficiently domesticated to come home to the village at night, after roaming about in the jungles to feed by day. Probably their owners are real animal-lovers, and take pride in these pets.

The chamois is an animal one reads much about, but very seldom sees alive. Therefore, the exhibition of a pair, from Austria, in one of the sheep-yards just outside the elephant-house, will be a great attraction to many, as the animal has very seldom been on view. It may be mentioned that the male of this pair is the smaller and shorter-horned of the two, being doubtless a younger beast.

principle of the arch, and is therefore capable of resisting great pressure, but, of course, the shell can be broken if the pressure is adequate. The principle of the arch is that the materials composing it are so arranged that the force applied compresses all the particles of the arch alike, and prevents them being torn or overcome separately.

Why is a musical instrument "flat" when the strings are slack?

The pitch of a note depends upon the number of vibrations made per second—the greater the number the higher the note, and *vice versa*. The number of vibrations made per second depends, for one thing, upon the tightness of the string—the tighter the string the higher the note. A string making 256 vibrations per second will produce middle C on the piano. If the stretching force be decreased through any cause, the string will become slackened, and, when plucked, will produce a note below middle C—i.e., it is

blubber procured from the animal. Should the heat applied be only a little too great, or the blubber used even slightly decomposed, chemical action takes place and a substance known as phocenic acid is produced, and it is this that gives the oil its objectionable odour. If the blubber is quite fresh, and only gently heated, the oil is paler in colour and not at all offensive to the smell.

How can you tell an elephant's height without seeing the animal?

Why do people who are short-sighted in youth gradually have this failing corrected as they grow old?

What is the most striking instance in modern history of the elevation of land by the agency of an earthquake?

Why does a fire at night appear to a person at a distant spot much nearer than it really is?

Has mining ever been neglected in England since the Roman Invasion?

Why is health benefited by cleanliness?

Amateur Photography.

On Toning Bromide Prints.

By ANTHONY J. PRESTON.

IN continuation of our notes upon toning bromide prints, we give some further useful hints.

BLUE TONING.

To tone bromide prints to a rich blue colour, they must be treated with the following iron bath:—

Citrate of Iron and Ammonia	12 grains
Potassium Ferricyanide ...	12 grains
Pure Nitric Acid ...	3 drops
Water ...	5 ounces.

The water should be measured out and the chemicals added and dissolved in the order given in the formula. This gives a rich blue colour, which in a minute or so, develops into a deep Prussian blue. If the toning takes place too quickly—the rapidity varies with different makes of paper—use more water, and when the desired tone is reached, transfer to a clean dish and wash in running water for about half an hour.

The beauty of the tone produced by this bath is greatly enhanced by immersing the print after toning in a solution of potassium cyanide. This solution must be very weak, one part of cyanide in five thousand parts of water is quite strong enough, and the prints must be well washed afterwards.

N.B.—The cyanide must be handled with care as it is a most deadly poison.

GREEN TONES.

There are two or three ways of obtaining green tones on bromide paper, and when the subject is well chosen and the print is a good one, very effective results can be quite easily produced. The most effective pictures both for blue and green toning, are such as possess plenty of contrast and can easily be made to produce the effect of moonlight scenes.

Seascapes are also very effective when toned in these baths; especially in the green bath, but the toning must not be carried too far or the result will be spoilt. One of the easiest ways to produce a green tone is to take a red toned uranium print and immerse it in the bath given above for blue tones. When the colour is judged satisfactory, the print must be washed for about ten or fifteen minutes.

Another way to obtain green tones is to add to the above blue bath, 12 grains of uranium nitrate. Prints toned by this method must be carefully washed in still water or the green uranium tone will be washed away, leaving the blue colour produced by the iron-bath. Red uranium toned prints will also acquire a nice green colour when immersed for a few minutes in the following solution:—

Dry perchloride of iron ...	30 grains
Water ...	one pint.

SEPIA TONES.

Of all the colours in which photographs can be made, that particular colour known as "sepia" is perhaps the most admired and sought after. Until quite recently, it

was rather a difficult matter to obtain this tone, but now, thanks to the introduction of the sulphide bath, it is almost childishly easy.

The prints intended for sepia toning should be full of vigour and clean, just that kind of print which would be produced on a correctly exposed paper, under a plucky negative, by the metol quinol developer mentioned previously (see THE COUNTRY-SIDE, March 9th, 1907). Flat and weak prints do not produce a good tone at all.

The solutions necessary are:—

No. 1.

Potassium Ferricyanide ...	280 grains
Ammonium Bromide ...	360 grains
Water to make one pint.	

No. 2.

Sodium Sulphide ...	60 grains
Water to make one pint.	

The sodium sulphide—which emits the objectionable odour of sulphuretted hydrogen—should be in transparent crystals and fairly dry. It will not keep any length of time without getting liquid so that the best thing to do is to dissolve all you get straightaway. The solution will keep better than the solid, although a fresh solution will produce far better tones than one which had been kept very long.

The *modus operandi* is as follows: Immerse the well-fixed and thoroughly washed print in solution No. 1, until it is completely bleached and the image is scarcely discernible. Then pour off the solution into another bottle (not back into the original) and wash the print under the tap for a few minutes. Transfer to a dish containing solution No. 2, and rock until the image attains its full vigour, which it will do in less than five minutes. The print will now be a rich sepia tone and must be washed for about a quarter of an hour and dried as usual.

In toning a quantity of prints, it will be found best to keep the solutions in the dishes, putting in the prints and taking them out again as required. Put the bleaching solution (No. 1) in one dish, the toning solution (No. 2) in another dish, and have a third for rinsing the prints in between the two baths.

REGARDING PERMANENCE.

The chemistry of these toning operations is in every case complicated, and in some cases is almost obscure. The resulting prints are made up of combinations of the original silver image with some or all of the compounds used in the toning processes, and as it is rather difficult and sometimes well nigh impossible to control the reactions which go on, we cannot be certain that the toned image will be as permanent as the original print.

The sulphide bath when properly worked produces an image consisting of silver sulphide, which compound, under ordinary conditions, is very stable and capable of withstanding the action of the at-

mosphere, so that prints toned by this method may be considered as being as permanent as the original silver image. The fading of the toned image on a bromide print is usually due to atmospheric action—that is, of course, presuming the whole of the toning operations have been carried out with due regard to cleanliness.

This being so, it follows that if we can by some means, prevent the air getting to the image, we shall be able to preserve our pictures. This object may be attained by spreading over the surface of the dry print a small quantity of oil colour meglip, which preparation may be obtained from any artist's colourman.

A little of the meglip must be rubbed on the front of the print with a clean piece of rag, and polished off again with another clean soft rag—an old cambric handkerchief is excellent for the purpose.

There are also one or two preparations on the market for the purpose, such as "Lustralene" and "Enamelene paste." These preparations are used in the same way as the meglip, and not only give protection to a print, but also produce a lustre and depth of shadow unattainable by any other means. For the benefit of those who have the necessary convenience and would like to make a similar preparation for themselves, I append the following formula:—

White wax ...	5 ounces
Gum elemi ...	45 grains
Benzole ...	2 ounces
Spirits of wine ...	3 ounces
Oil of Lavender ...	1 drachm.

The wax and gum elemi are melted together in a pot placed in a saucepan of water and boiled, and the other ingredients are added with constant stirring. To those who do not understand the nature of benzole, let me say that it is an extremely inflammable spirit, and must on no account be brought anywhere near a flame.

CONCLUDING REMARKS.

There are several methods of toning bromide prints not noticed in this article, but I think you have a good choice of tones and some processes which are not at all difficult to work. Some of the toning processes require no small amount of manipulation, which, considering the ease with which we can produce the required colours by other means, is hardly worth the while, except for the sake of experiment.

In all these toning processes, the print when in the various solutions must be kept on the move, and it is always better to thoroughly soak the print beforehand and to tone them while wet. The neglect of these two trifling precautions is very likely to lead to uneven action of the tones, thereby producing a patchy and worthless result.

Prints toned in the baths containing uranium should not be subjected to very prolonged washing after the toning or some of the tone will wash away. Finally, prints required for toning must be well fixed, and must be washed free from every trace of hypo.

Live-Stock for Profit and Pleasure.

POULTRY.

By "CHANTICLEER."

Campines.

ONE of our chief egg-producing countries is Belgium, but if we enquire closely into the methods adopted on the Continent, it will be found there are no extensive poultry farms or establishments, but that by a system of collection the eggs are brought into various centres from hundreds of cottagers who give attention to poultry, and depend upon their birds as a means of livelihood, whilst the principal breed kept is that known as the Campine, which for a considerable period has been the only fowl bred.

I shall not attempt to give this useful fowl's history. Suffice it to state that since their introduction into England they have an excellent reputation for laying eggs in abundance with marvellous regularity in winter and summer; in fact, unlike many of the Mediterranean varieties, they are not affected by the severe winter weather.

The Campine is not a massive breed, and, from a utility standpoint, it is an egg-producing breed, making no pretence to table properties, although they have a fair amount of breastmeat, and are not to be despised as a small dish. They endorse the views I have so often expressed in the COUNTRY-SIDE, that "the most active fowl is the nearest approach to profit," for they are wonderfully active and very prolific fowls.

The pullets often lay their first egg at sixteen weeks, which early maturity cannot fail to result in profit to their owners. Here I would give a note of warning not to hatch the precocious Campine until the spring is well advanced—say, April and May—or they will lay in abundance in summer and early autumn, falling into moult when the cold weather arrives, and cease laying during the winter, when eggs are dearest, seldom starting again until the following spring.

This unprofitable procedure, however, may be avoided by hatching during the proper months—in fact, the first week in June is not too late.

Campines, when allowed their liberty, can be kept at a very small cost, for they are exceptionally small eaters and splendid foragers, so that in country districts they are strongly recommended. It is not surprising that our Belgian friends found them so suitable for cottage poultry-keeping, which I am optimistic enough to predict will be more generally adopted in Great Britain in the future than it has been in the past.

The Campine's egg is a fair size, although I must admit there are some strains which lay rather small eggs, but, by careful selection, the size may be considerably improved, not only of the egg but of the breed itself, and I am pleased to add poultry keepers on this side of the channel have done much in this direction during recent years.

It has been urged that the Campine, Braekel, and Hamburg have one and the

same ancestry, but I consider exquisite fine pencilling of the latter very different from the coarse marking of the Campine.

There are silver, also gold, Campines, each of which may be truthfully termed pretty and attractive, the former being the most popular, having a white or silver ground colour with rich beetle-green, mackerel markings or barring evenly distributed, and forming as near as possible "rings" around the body.

The comb is single and erect in the cock, but falling over the face in the hen. Earlobes white, and face red. The hackle is pure white; colour of legs is leaden blue. As to size, the larger the Campine is bred the better, whether for utility or exhibition purposes.

Those who take up this charming variety of poultry will be pleased with the result of their labours.

CATS.

AT this season, when fanciers are looking forward to litters of kittens, and the queen mothers are searching for comfortable beds, it may be useful to give a few hints. It is most important that all female cats should be freed from worms before being allowed to breed, or even to mate.

So often young kittens fall victims to these pests, having sucked in the disease with their mother's milk. It is quite safe to dose the female a month after she has been mated. Most fanciers know too well the symptoms which are suggestive of worms in cats or kittens, but beginners should take note if their animals have a ravenous appetite and yet seem none the better for their food.

Again, the appearance of the coat is very tell-tale; the fur becomes "spiky" instead of fleecy and fluffy, and corners come up in the eyes, forming a sort of white skin. There are several remedies for worms to be obtained from cat specialists. Capsules are preferable to powders to administer to cats.

When cats are in kitten care should be taken in handling them. It is injurious to pick up a cat under these circumstances by the front paws, leaving the heaviest part of the body suspended in mid-air.

For some days, if not weeks, before a litter is expected the female cat will search for a bed. On these occasions great partiality is displayed for a wardrobe shelf or a bottom drawer, and even bonnet-boxes containing treasured best hats are not safe from pussy in her persistent voyages of discovery.

It is best to get a suitable bed ready in a quiet corner, and to accustom the cat to sleep there some little time before the family is expected. In winter a bed of hay is the warmest, but in summer paper is cooler, and generally cats like to tear this up and make their own bed. It is well to sprinkle a little Keating's powder underneath the paper at the bottom of the box.

It is not safe to put this powder on young kittens. It is much better to carefully use a tooth-comb to rid the little creatures of these troublesome insects. A nursing mother should not have solid food given at first, a milk diet being desirable.

Later she will require three good solid meals a day, with milk at intervals if she will have it. Some cats take a dislike to milk at such times, and prefer water. It is a mistake to feed the mother in her bed; it is best to make her come out and take her meals. Some cats

are never so pleased as when being talked to and the kittens duly admired. Others, on the contrary, resent being looked at during the first days of their motherhood.

They may show their displeasure by carrying off their kittens and hiding them. It is after the first ten days that a nursing mother begins to feel a large family somewhat trying; then it is well to place one or two with a foster. Sleep is almost as essential as food to young kittens, so when the family is comfortably cuddled up together do not disturb them, and always avoid handling very young kittens. Persian cats very seldom have more than two litters in the year.

DOGS.

THE railway authorities have again refused exhibitors the concessions in fares to and from shows asked for by the Kennel Club, who are, naturally, very disappointed at the repeated failures of their efforts to secure for the dog-owners the same cheap facilities of travel as are enjoyed by the breeders of live stock and horses. There's no such word as fail, it is said, but in this instance the goal of achievement seems very far off.

The Dane and Borzois Show has been a great success, and the exhibition has done much to advance the fortunes of the Danish hound, more especially the harlequin variety, which musered in numbers and great beauty of markings and variety of colour.

The blue merle collie promises to oust the sable and white from its pride of position as first favourite, and the recent shows in the North have shown that for collie characteristics the merle now is stronger than the old favourite, whose points have been exaggerated to such a degree that except for coat and shape of leg he would be unrecognisable, and is more of a borzois collie.

Major Richardson is now showing the beauty and utility of his field and ambulance dogs to the Sultan of Turkey, who has purchased a trio for use in the Turkish battalions.

The Ladies' Kennel Association are following in the footsteps of the Kennel Club, and forming a Council of Women Representatives.

CAGE BIRDS.

Notes about Mules and Mule Breeding.

THIS branch of bird-keeping promises to rapidly become one of the most popular, as it is certainly one of the most interesting, branches of aviculture. It is a fascinating and in many cases a difficult pursuit, and yet with a hen canary as one parent the rawest novice will often meet with much success.

Of course, the beginner in this way does not often produce the best specimen from an exhibition point of view. On the contrary, it is rather by a rare stroke of luck that the novice produces valuable birds at the starting-point, but against this he may at least have

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If you want to buy or sell Poultry, Dogs, Cats, Birds, etc., try our Sale & Exchange. See Back Cover.

(Continued from page 377.)

the consolation of knowing that the most experienced and skilful breeder does not produce the birds that are most sought after at will. Far from it, for the much-coveted "light mule," which is often literally worth its weight in gold, is always a *rara avis*, and I am convinced the breeding of it is oftener the outcome of chance rather than design.

The Mules that are Valuable.

The novice in this hobby is sometimes handicapped by having a wrong idea of what is wanted. A bird of good size and shape, but following closely the prevailing colour of the finch, is much valued by them, whereas from an exhibitor's point of view the mule's value increases in direct ratio as it approaches in colour a clear unmarked canary. A goldfinch-canary mule, for example, that shows the finch parentage only in shape and position, and appears otherwise as a clear yellow or buff canary, with perhaps an indication of the scarlet blaze round the beak and the deep yellow blaze on the wings, is the fancier's ideal of a valuable "light" mule, as they are termed.

In a general way the same may be said to apply to all varieties of finch mules. Although a really good dark mule has a certain value, it is trifling in comparison with what a light mule of even fair quality will always command.

How to Breed Them.

Naturally this is what everybody interested in the subject would like to know. But opinions differ diametrically and confusion exists, as it always will until it is generally recognised that chance or "freak" probably plays a certain part in the production of the typical light mule. Be that as it may, the use of a pure strain of sib-bred canaries will help to accomplish the object in view infinitely easier than working with any kind of ordinary-bred canaries.

There is a certain school who hold that the finch has a great influence over the colour of the young, but although there is extremely little, if any, convincing evidence in favour of the theory, it is best to treat the matter as a possible aid to attain one's desires, and select only the lightest coloured finches accordingly.

But the chief object is to secure the proper strain of canaries, bred as closely on the lines of consanguinity as is consistent with preserving health and stamina. Then, if one is lucky enough to secure a fine bird that persistently breeds a fair amount of light mules amongst its progeny, they should stick to those particular birds through thick and thin, on the chance of them some time or another producing one of the much-coveted light mules.

Sib-Bred Canaries.

As already intimated, the birds known by this term are simply canaries of any variety which have been in-bred by mating together birds that are related to each other. Although any variety may be utilised to make a strain of sib-breds, the Norwich or Yorkshire are undoubtedly the best all-round sorts, as they may be had of a fair size, and have lots of colour to draw upon, as well as being of good shape and position.

It is not advisable to start with small breeds or those in which the colour is naturally weak, because both size and colour must be expected to deteriorate more or less by in-breeding.

As the mule breeding season opens generally about a month later than the canary season, this interval should be taken advantage of to procure a nest of pure canaries bred on the lines just suggested. Hens that have previously bred young light mules, or partly light ones, should invariably be mated with a near relative for this first nest, in order to keep the strain in existence for future years.

Portugal Laurel.

It is not generally known that the Portugal or Cherry Laurel (*Cerasus lusitanica*) will grow to the dimensions of a good-sized tree. We lately saw in a garden in Chelmsford, Essex, an exceptionally fine example of it.

In form it was not unlike a dwarf oak, being 25 feet high, the trunk nearly eight feet in girth, and the spread of the branches 105 feet in circumference. When allowed to grow naturally, the shoots assume an elegant habit, and in May they produce a big crop of racemes of white fragrant flowers.

Like many other good-natured garden plants, the Cherry Laurel is mutilated, starved, and generally ill-used because it is long-suffering. When a healthy developed example of it is seen, people fail to recognise it.

Our Photo. Competition.

Twelve Guineas in Prizes.

We offer Prizes to the extent of Twelve Guineas a year for the best photographs sent in by readers. This sum is divided into twelve monthly prizes of One Guinea.

Photographs intended for the May competition should have their titles and names and addresses of their senders written clearly on the back, and should be addressed "Photo," THE COUNTRY-SIDE, 2 and 4, Tudor Street, London, E.C. One guinea will be awarded for the best photograph for our purposes, and 3s. 6d. will be paid to other competitors whose photos may be used. We retain the right to use any photos sent in.

Stamps should be enclosed if the return of the photographs is desired in case of rejection.

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COUPON.

Answers to readers cannot be guaranteed unless three of these coupons be forwarded with each query or specimen for identification. Available till May 18th, 1907.

Answers to Correspondents.

SPECIAL ANNOUNCEMENT.

Owing to the pressure upon our space, it is only possible to print in these columns answers to questions of general interest. But so that other correspondents may not be disappointed in receiving answers to their queries, we are prepared, as far as possible, to send such answers as are not of sufficient interest to publish, direct by post, provided that with each separate question three Coupons (like that on this page) cut from the current issue of "The Country-Side" are enclosed, and the correspondent promises to distribute the three copies of the paper among persons who do not already take it.

N.B.—Readers who desire to have specimens named would be well advised to join the B.E.N.A., and thus obtain the advantage of the services of the numerous experts who are willing to name specimens for members. A list of experts is published with the B.E.N.A. list of members.

Food for Thrushes.—Two parts stale bread, 1½ parts preserved yolk of egg, ¼ part pea meal, and 1 part ants' cocoons, mixed together and made in a moist paste with hot water and let stand until cold, is a good food to bring up young thrushes. As many live insects—even small earthworms—as can be obtained should be given in addition. Tweezers are useful for giving the latter item. Long-tailed tits certainly make nice and tame pets, but we do not care about seeing these birds caged. They would require a small box to roost in at night. (to F. G. Hobson, Studland.)

Hedgehogs and Young Owls.—The hedgehogs would undoubtedly be able to find plenty of food in your garden, and would do little, if any, damage so long as they remained with you. They have a wonderful knack of escaping whenever they wish, in spite of high walls. Lean beef or mutton, poultry, or rabbit, cut into small pieces, is very good food for owls when their natural food fails. If these substitutes have to be given for any length of time, occasionally add a few small poultry or pigeon feathers to it to keep the crop in good order.—(to Anglesey.)

Bird as Pet.—No, a Nangriest would not be a very pleasant bird to have for a pet. The nature of its food makes it unpleasant in certain ways. All soft-billed birds are more or less unpleasant from the same cause, but as you prefer a bird of this class shamas or dhyal birds make most charming pets. For a small bird—about as large as an English robin—a Pekin nightingale makes a nice pet.—(to Miss S. Pasley, Botley.)

Paraquets Moulting.—They are the Madagascar love-bird—a species of pigmy parrot. Examine birds and cages carefully to see if insects are present. Feed on equal parts of white millet and canary-seeds, with a few oats added, and you may give seedy chickweed, seed heads of grasses, and a little plain, dry biscuit and sweet fruits, if they will eat the latter. Some will not. Add twenty drops of syrup of hypophosphites to the drinking water daily for a time. Why not keep the birds together in one cage, as it usually done with these birds.—(to Miss M. C., Bedford.)

"Stubble Bessy."—The bird about the size of a lark, with a song something like the sound of a cart-chain being dragged across a cobbled farmyard, which sits on hedges, is no doubt the corn-bunting, a near relative of the yellow-hammer, which you say is known locally in Cumberland as "Bessy."—(to W. Lowther.)

Food for Grassfinch.—It seems doubtful what the bird really is—probably the long-tailed grassfinch. All these birds, and also the gouldians, are very frugal, and will not touch a great variety of foods. Ordinary packet seeds must be very wasteful, as the birds would throw out more than they eat. The proper food is about equal parts of canary and white millet seeds, with a few small oats added. An occasional bunch of spray millet, a little mixed grass seed, or a handful of sweepings from a hay loft, bunches of seedy heads of grass, and seedy chickweed will afford all the variety the birds care for.—(to "Errand Boy," Heaton.)

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(Continued from page 378.)

Soiled Plumage.—If badly soiled, hand-washing would be best if you knew anyone who understood how to do it. Failing this, give the bird a saucer three-fourths full of lukewarm water, and let it bathe as often as it likes. Cleanse the saucer, and give fresh water each time it bathes. It will doubtless soon clean itself. Next time when cleaning a bird's feet hold them for a minute or so in warm water to soften the dirt, and not in oil.—(to Mrs. C. W., Portishead.)

Eggs of Cormorant or Shag.—Cornwall is not too far south for the Shag; it breeds regularly along the rocky coasts of the South of England as well as in the North, and is more common than the Cormorant in Cornwall. The egg is smaller than the Cormorant's egg, which measures about two inches in its long diameter; but you would have to compare your egg with identified eggs of the two species to be quite sure.—(to G. Waterhouse.)

Shedding of Snake's Skin.—The way you observed is the usual one for a snake to get out of its skin—this splits at the lips, and the snake simply crawls out, usually leaving the shed epidermis reversed. The process is like pulling a stocking off one's leg.—(to E. R. Buckell.)

Humming-bird Hawk Moth.—The occurrence of this moth early in April is certainly unusual, but it does not necessarily follow that it has hibernated because found in a room, though this is probable. It sometimes hibernates, but also migrates here.—(to J. C. Mill.)

Newts and Frogs.—Feed your smooth newts on slugs, small worms, gentles, ant-eggs, and aphides. Place the frogs' spawn where the sun will reach it. The tadpole is nourished for some time by the remains of the yolk-sac in its body. When this is absorbed it feeds on the green confervoid vegetable growth; therefore, place some of this together with a little food of a fleshy nature, in the water, which does not require changing often.—(to W. H. Rodell, Littlehampton.)

Pigeons and Doves.—We are of opinion that your domestic pigeons will rear the young woodpigeons from the eggs which you have placed under them. An advertisement in this journal would, no doubt, be the means of your getting fertile eggs of the stock dove.—(to A. M. Dryden, Paisley.)

Moth Identified.—The moth which you send is a Buff-tip (*Pygæa bucephala*), a common insect in most parts of England. The yellow and black caterpillars (of which an illustration was given in THE COUNTRY-SIDE of September 22nd, 1906), are often so numerous as to amount to a plague.—(to J. Conway Walton, Mablethorpe, Lincs.)

Park Birds.—I cannot tell you off-hand whereabouts in Regent's Park you could see a greenfinch's nest; nests want looking for, even where birds are common, in most cases. The Zoo grounds are the best place for greenfinches. The birds about twice as big as blackbirds, with red on bill and white on tail, seen on bushes near a stream, were moorhens.—(to E. C. Parsons.)

Pekin Robin.—These birds are sent here in winter, and this season's consignments are mostly sold out now. They will live well in an aviary.—(to A. Bentley.)

Blackbirds Building on a House.—Yes, this is an unusual occurrence.—(to C. S. Sharpe.)

Snipe Perching.—It is not uncommon for snipe to perch at times on trees, etc.—(to C. H. Bickley.)

Mistle-Thrush Mobbing Rook.—Mistle-thrushes make a practice of mobbing the crow tribe and other predatory birds, on general principles, as it were, so the occurrence you saw is not unusual, though interesting.—(to F. J. Brett.)

Leeches Changing Skin.—The ordinary medicinal leech changes its skin, as your horse-leeches have done.—(to A. C. Budd.)

Newts.—Our recent photograph of newts is not remarkably distinctive, but you are probably right as to their being the smooth newt—the crested newt has not the raw edge to the tail-crest, as we inadvertently stated.—(to A. Correspondent.)



[H. Tos.]



[A. B. Oddie.]

Longitudinal sections of part of the root of a human tooth.

Early Cuckoo.—Naturalists are very sceptical about any recorded occurrence of the cuckoo before April, though in some cases, we think, unreasonably so. Mr. F. W. Frohawk, the well-known naturalist and artist, gave what seems a perfectly reliable record of a cuckoo near Hereford on March 29th this year in the *Field* for April 20th last. You should remember, however, that the early breeding of a resident like the partridge is a more probable event than the early occurrence of a migrant, and more easily substantiated.—(to J. Robinson, Spalding.)

Feather Picking.—The general reason for feather plucking is overheating of the blood and want of exercise. A good daily supply of succulent green food must be given, also Epsom salts in the drinking water, and for a few weeks abstain from giving the birds any soft food, but a moderate quantity of small mixed seeds well raked in loose litter. The run must have a portion fully covered in and the ground with a good depth of loose litter, such as straw, etc. In this all corn must be scattered, which will give the hens plenty of exercise. A little sulphur ointment, two parts powdered sulphur, one part lard, may be rubbed in the bare parts, which will soon cause the new quills to appear. It is also advisable to give such fowls a daily feed of green cut bone (finely chopped butcher's bones) to pick over, so as to supply a substitute for insect food.—(to "LADYBIRD.")

To Poultry Keepers.—Half the battle in successful poultry keeping is to have proper apparatus, and for incubators, coops, runs, and, indeed, all kinds of poultry requisites, Messrs. Boulton and Paul, Ltd., of Norwich, have long been noted. They make a point of using only the best materials and workmanship, so that their goods may be relied upon.

The Microscope.

Slides of Bone and Ivory.

MICROSCOPIC SLIDES of bone, teeth, ivory, etc., are very easily prepared, and are wonderfully beautiful. I have found the following method very useful, as it is simple and cheap.

All that is required in the way of apparatus is the following:—

A small fretsaw; two or three sheets of sandpaper, medium and fine grain; two sheets of ground glass four to five inches square; a little pumice powder; microscopic slides and cover-glasses; some solid Canada balsam.

With the fretsaw cut a section of the tooth or bone as thin as possible. Then rub it between the sandpaper until it is reduced to the thickness of a postcard, starting with the medium roughness and ending with the fine.

Take a little of the pumice powder on the

ground side of one of the ground glasses and mix it with water to a thin paste.

Place the section in the middle, and the other glass ground-side down on it. Then proceed to rub the two glasses two and fro with a circular motion.

When the section appears to be thin enough, take it out and wash it in water. Then place it in a drop of water on a slide and examine under the microscope. If sufficiently thin wash the ground glasses and give a final rub between the ground sides with water only and no pumice. This will remove surface scratches caused by the pumice powder. Take a slide and warm it; then in the centre place a clear piece of Canada balsam. Warm the slide gently, so as to melt the balsam (too much heat will cause bubbles to form in it), and in the middle of the melted gum place the section which has been washed thoroughly and dried between the finger and thumb (it must not be bone dry).

Over this place the cover-glass, and gently but firmly press it down, keeping up the pressure until the balsam has set hard, which only takes a few minutes. When set, the superfluous balsam is trimmed away, and the slide is ready for the microscope. If you possess a lathe fitted with a chuck, a better method than rubbing down with sandpaper is to get a flat carborundum or corundum wheel (three or four inches in diameter) mounted on a spindle to fit the chuck, and grind the section down with this, keeping it constantly wet. These wheels cost only a shilling or two, and will last for years with care. The rest of the operation is done in the same manner. Teeth of fishes and animals, also bone and formations similar to bone, can be treated in this way. Teeth of fishes, even those of the commonest varieties, give a great many beautiful variations of structure, and are extremely easy to prepare. With a little practice, excellent slides can be made by this simple method.

G. B. ODDIE.

OUR
Sale & Exchange

3 WORDS A PENNY.

See the Back Cover.

The Garden.

Work for the Week.

The Fruit Garden.

KEEPING the ground clean is now of great importance in the fruit garden. Many gardeners appear to be unaware how essential good soil cultivation is to success in fruit-growing. An orchard where the surface is kept clean of weeds and in loose condition by hoeing, is the ideal condition. The system of keeping the soil in good order by cropping comes next in order of desirability. Where this is done the trees cannot have surface roots, but it is usual in the immense orchards of the United States and elsewhere, and bumper crops certainly appear to be the rule in those districts of France when corn and roots are grown in close company with fruit trees.

There is no doubt about it that an orchard in grass land is the least desirable condition. Where this has to be, however, great benefit will accrue to the trees by keeping a circular cultivated bed, say, of eight feet in diameter; but this is an aid to their well-being that is all too frequently neglected.

Bulbs.

As soon as they wither, the flowers of daffodils, tulips, etc., should be removed to preserve a tidy appearance, but it is a great mistake not to leave the bulbs in the beds as long as possible. It is very bad for them to be moved before the leaves commence to turn colour, and in our fickle climate it is also unwise to hurry up with the summer bedding. When the bulbs have to be moved, they should be laid in rows in a bed of ashes, to be afterwards kept in the bulb stove, or planted in the reserve garden, or, should they be suitable subjects, bulbs that have been employed for bedding may, with advantage, be planted in the wild garden.

We counsel the growing of bulbs in beds which are also occupied by perennial plants late in starting into growth. Where this is done, the bulbs can remain to ripen off naturally, and admirable spring and summer effects are obtained for the minimum of trouble. We have had a fine display of daffodils, etc., in beds, and now such plants as *Funkia*, *Campula persicifolia*, perennial *Lathyrus*, herbaceous pæonies, and *Chrysanthemum maximum* are coming along to brighten up the garden later on.

Window Boxes.

As we have already seen several premature displays of summer brightness, it may be well to state that the last week in May is quite soon enough for the putting out of tender plants in window boxes. As an immense quantity of plants are annually rushed into existence under conditions that effectively preclude their ever being profitable to the unwary purchaser, discrimination in purchasing is certainly advisable. Even if he is unwilling to accept old clothing, rabbit skins, and empty bottles in part payment, the local nurseryman will

usually be found to give better value than the plant hawk.

Border Chrysanthemums.

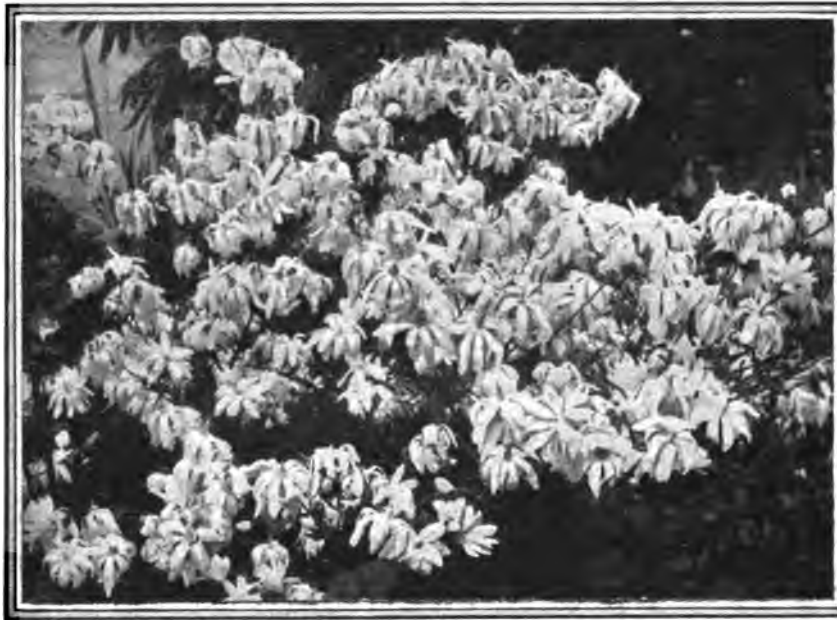
These valuable plants may now be transferred to their summer quarters. Plant about 18 inches apart each way, and pinching-back must be resorted to for a time to produce bushy plants later on. A far better effect will be produced by massing than by dotting chrysanthemums about here and there. Roi des Blanc, Improved Madame Desgrange, Tuckwood Bronze, Crimson Marie Masse, Goacher's Crimson, and Beacon are a good selection of the many excellent varieties that exist.

G. T.

The Star Lily Tree.

A Beautiful Spring-Flowering Shrub.

MAGNOLIA STELLATA is one of the most beautiful of all spring-flowering shrubs. It came from Japan many years ago, but as in the case



Photo

Star Lily Tree, *Magnolia stellata*.

[C. P. Raffill.]

of many other plants introduced from that country into English gardens, it was treated as a greenhouse plant; consequently, it never did itself justice.

Now, however, that we know it to be as hardy as the yulan or the aucuba, it is being planted in open borders and as a lawn specimen. We know of bushes of it ten feet high and forty feet round, and their attractiveness in spring, say, mid-April, when the flowers expand, can be imagined from the picture of a small bush on this page.

The flowers are snow-white, although the buds are tinged with red; there is also a rose-coloured variety. Each flower is from three to five inches across, and it lasts a week or more in water.

There are some fine bushes of the white form at Kew, where they have flowered very freely this spring. Magnolias do not transplant easily; it is therefore advisable to purchase plants that are established in pots to be certain of their growing when planted out. They are not particular as to soil, but a light, loamy, or peaty soil is better for them than a heavy, clayey one. A bush two feet high would cost about 2s. 6d. retail.

Saxifraga ligulata.

THERE are no more useful plants for the rock garden and border than the dock-leaved saxifrages, of which the two best known are *S. cordifolia* from Siberia (also known as *S. crassifolia*), and *S. purpurascens* from the Himalayas. They have a stout, branching rootstock, and leathery, dark green, shining leaves, and they develop in April stout scapes bearing numerous bell-shaped flowers, the first-named being pink and the second vinous purple. They are excellent soil and stone binders, and no better plant could be used for clothing a stony bank or hiding unsightly ground.

Another handsome species of the same group is *S. ligulata*, also Himalayan. It has leaves up to a foot in diameter, but usually they are about half that size, and they are deciduous. The rootstock is very stout, and from it are pushed in March or April, according to the season and position in which the plant is grown, tall, branching scapes of pale pink flowers.

There are two fine examples of it at Kew, one in the Himalayan house, where the rootstocks cling to rocky crevices over a rock pool, and one in the rock garden. In the former position the flowers are produced in March, and are nearly white, but in the rock garden they are at least a month later, and they are pink. The handsome foliage is developed immediately after the flowers.

The picture published on page 338 of our issue of April 20th was, owing to an unfortunate error, named the double-flowered saxifrage (*S. granulata* fl. pl.), a British weed. The photograph was really *Saxifraga ligulata*.

Garden Queries

Plant Identified.—Your plant is one of the Gromwells (*Lithospermum*), and may be *L. officinale*, which is fairly common in some parts of the country, frequenting copses, hedge-banks, etc. It grows to a height of from one to three feet, has hairy leaves and

short cymes of yellow white flowers produced in June, and followed by hard, bead-like nutlets. It is the Thé de Montagne, the leaves being dried and used as tea on the Pyrenees. It is closely related to the forget-me-not family.—(to P. E. Woods.)

Wild Cherry and Gean.—The cherry when wild is sometimes only a shrub, but it also occurs as a tree of considerable size. *Prunus cerasus*, or *Cerasus vulgaris*, is the true "Wild Cherry." It is planted for its timber in some countries. A form of it is the "Gean," sometimes distinguished as a species and called *Prunus avium*. Then there is the "Bird Cherry," *Prunus padus*, which is often met with as a shrub six or eight feet high, but also occurs twice that size. There is little doubt as to which of these were the progenitors of garden cherries.—(to C. Bussey.)

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